

# *Envisioning Tomorrow*

*to Focus Today's Resources*

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14. ABSTRACT This document describes the overall study methodology and a range of scenarios describing global conditions, the US health system, and military health in the year 2020. It also outlines a draft vision and shared identity statement, a set of long term audacious goals and strategies, and a set of near term strategies that compliment the current MHSS Strategic Plan.					
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# **Envisioning Tomorrow**

*to Focus Today's Resources*

**MHSS 2020**

Military Health Services System

**1996**

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What we see after nine months of on-line group discussions can be summed up as a starting point for discussions of a collective and shared vision: \*

- We want to be a responsible and responsive military health system;
- We want to be totally unified in all our endeavors;
- We want to approach military health from a holistic perspective;
- We want to exploit all technology and mechanisms that achieve increasing states of health for our armed forces, their families, and all military health beneficiaries.

\* *CDR Veronica Rubin, MHSS 2020 participant, from the on-line conference, August 1996.*

So, why study the future, the future of the military health system? In some ways, the future is staring at us. We cannot see it because it is just beyond what appears to be obvious. It is counter-intuitive. It is somewhere just beyond the chaos. We can almost touch it.

We study the future of military health because there is a tremendous synergy and hope in developing a vision that is shared by all, in developing strategies that lead us to fulfill our vision and preferred future.

We study the future because we learn. We develop and implement collaborative learning tools across the entire system. We use them to help us make decisions. We continue to explore. We become a true learning organization. We continually improve. We refine. We improve. We refine. We .....

We explore the future of military health because of all the reasons not to: the chaos, the uncertainty, and the nonlinear nature of our world. We study and explore the future because we would be negligent if we did not.



William R. Rowley  
RADM, MC, USN  
Chairman, MHSS 2020  
September 1996

## ACKNOWLEDGEMENTS

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Success in an undertaking of the magnitude of MHSS 2020 is the direct result of efforts of numerous organizations and, more importantly, the result of the collective efforts of a group of talented and dedicated professional military and private sector MHSS 2020 participants. Realizing that I will surely not identify all who have made this process so rewarding, I do want to thank various organizations and individuals for their contributions.

There would be no MHSS 2020 project or process without the vision and ability to articulate the need to embark on such a challenging journey. Lieutenant General Alcide LaNoue, the Army Surgeon General, was the initiator of the basic question of facility obsolescence and the force behind the vision of the 21st century military health facility. LTC Dale Brown, now Commander of the U.S. Army Health Facility Planning Agency, provided the vision, intelligence, and action behind the scope of MHSS 2020, its goals, processes, and structure. LTC Brown built the vision, persisted for over a year in telling the MHSS 2020 story throughout the MHSS, and developed a process that was unprecedented in its approach to defining a coherent long-term future for the MHSS.

The MHSS 2020 process involved the selection and volunteer participation of over 200 military and private sector health experts across a range of clinical and administrative health specialties. Each participant was asked to provide 2-5 hours per week in an on-line virtual conversation to help define the future military health system, initially within their respective clinical and administrative specialties, and subsequently in a cross-leveled group exploring specific military topics. What they produced, individually and collectively, are the insights and content within this book. They also provided the enthusiasm, talent, and persistence in keeping a sometimes very difficult electronic conversation going. In Phase I, we had 20 dedicated military facilitators that motivated their respective groups, maintained the timeline and direction, and collectively developed more than 4000 statements reflecting key forces, forecasts, vision, and leverage areas impacting the MHSS, the U.S. health system, and the world. In Phase II, twenty of these exceptional participants provided the facilitation and written narratives for the topic level scenarios. I sincerely appreciate the work done by all of the participants who contributed to this effort.

Providing the overall guidance and management for MHSS 2020 were a group of Senior Advisors consisting of: CAPT M. Jane Markley, USN (OASD-Health Affairs); CAPT (RET) Jack

Taylor, USN; COL Scott Beaty, USA; Col Jack Aenchbacher, USAF; CAPT (RET) Dave Morton, USN; and Dr. Artie Shelton, VA. The advisors provided the structure, process, and product oversight for the entire effort. This included the initial selection of participants for MHSS 2020; monitoring and participating in the on-line conference; development of Phase II goals, objectives, and processes; and providing the overall leadership to make MHSS 2020 a success.

A contract support team was established to bring together the best skills in the discipline of futures thinking, systems and health, organizational development, and health facility planning. The Institute of Alternative Futures facilitated the futures design and group processes for the entire conference, developed the overview scenarios, and participated in the development of the book. Systems Research and Applications Corporation provided the overall contract oversight, developed quantitative and semantic leaning tools, ensured participant connectivity, and provided all conference planning and project support. Metasystems Design Groups provided organizational development facilitation skills and an Internet software package that provided the ability to conduct an on-line conference without concern for time and distance between the participants. VW International, a health care engineering and management firm, provided all the publication and graphic support for the entire MHSS 2020 effort.

I want to give special thanks to Dr. Stephen Joseph and Dr. Ed Martin, the Assistant Secretary and Principal Deputy for Health Affairs. I would also like to thank Mr. Charles Monfort, Deputy Assistant Secretary for Policy and Planning Coordination. All three were willing to take the risks associated with an unprecedeted and unproven process. They had the courage to support this very challenging effort in the face of unknown and potentially unpopular study outcomes. I hope that we live up to their confidence and trust in our quest to visualize the system, function, and form of 21st century military medicine.



William R. Rowley  
RADM, MC, USN  
Chairman, MHSS 2020  
September 1996

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## EXECUTIVE SUMMARY

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### ES-1 The Seeds of Tomorrow

MHSS 2020 began with a seemingly simple, but profound question from a senior officer inspecting the latest construction of a new, tertiary care, military medical center. He wondered aloud whether the facility would serve the future needs of military health, and whether, in fact, the facility was already a dinosaur. The officer thought briefly where these questions might lead. Perhaps they would lead to a series of meetings to discuss medical sizing criteria as the facility seemed much too large. Perhaps the officer's questions would lead to a task force to make recommendations on how to compress the programming, design, and construction cycle for planning new military health facilities, a cumbersome and lengthy process with many departmental and Congressional barriers to bringing new facilities on line. As he considered further, none of his experience, but all of his knowledge, suggested that facility sizing and construction were not the issues at all. These issues were much deeper and more complex. Sometime during that facility inspection two years ago, the senior officer got a twinkle in his eye as he formed a sense of where his questions would take him. As his staff began discussing all the related health facility design and construction issues, making plans for meetings, and tasking the health facility planners to provide information papers, the general smiled inwardly. He knew that the seed had been planted. Even he, however, did not realize the scope and breadth of where his questions would take the Military Health Services System (MHSS). It would take all of us into the future.

The seed grew into a process called MHSS 2020, a group of 200 military and private sector health professionals, chartered to create an ongoing process to explore long-term visioning and strategic requirements for the military health system. Using the most powerful and unique methods ever envisioned to explore future possibilities and uncertainties, MHSS 2020 has provided an unprecedented approach for the MHSS, as an entire system, *to envision tomorrow to focus today's resources.*

## ES-2 Why Water the Seed?

General Gorden Sullivan, former Army Chief of Staff, in his presentation at the February 1996 Futures Symposium, said "You must recognize that you may not know what you do not know.....your recognition of that fact and a certain amount of humility, will help you as you think about alternative futures. Very little fits like it used to. Be wary of pat approaches. There are too many paradoxes." Consider...

- "Go to Rwanda and stop the dying." General George A. Joulwan, Supreme Allied Commander Europe.
- "Who would have thought our deployments now lead with water purification, medical resources, and some military police." General Gordon Sullivan.
- General Jack Merritt, USA Retired, stated in a recent editorial that the Army alone has been deployed 25 times in the last six years compared to ten times in the 40 years following World War II.
- Alvin Toffler, in a 1993 interview with Peter Schwartz, stated that if he wanted to know about economics, he would seek a group of psychologists. If he wanted to get a glimpse of the future of human behavior, he would talk to a group of economists. Why? It is the rules within the discipline that limit our ability to move beyond our biases.

There is every reason not to study the future, to just deal with the tremendous problems and challenges of today. When commanders state that there is so much uncertainty, they are not sure how they will deliver care in the next six months, why consider what might happen 25 years from now? Many of our tools for planning and programming do not provide the ability to prepare for a rapidly changing future. Given the uncertainty, the chaos, the rapidly changing conditions within the global community, and our armed services, why study the future? The future will come whether we attempt to plan for it or not. Why water the seed?

We water the seed because there is almost no one in the United States that military medicine has not touched, either directly through the military health system or indirectly through military medical research and development.

We water the seed because of the increased complexity of our world, the increased pace of change, and the increasing number of worldwide conflicts due to peace with the former Soviet Union.

We water the seed because of all the challenges surrounding 21st century global conditions, warfare, anti-war, health care, and military medicine.

Finally, we water the seed because there is tremendous opportunity to create our future, the future military health system.

### **ES-3 The Roots Take Hold**

Over the past nine months, the seed has been watered and the roots have taken hold. In January 1996, MHSS 2020 received its charter as a working group and subcommittee of the MHSS Strategic Planning Committee. Under the charter, the processes for exploring the future of military health were developed.

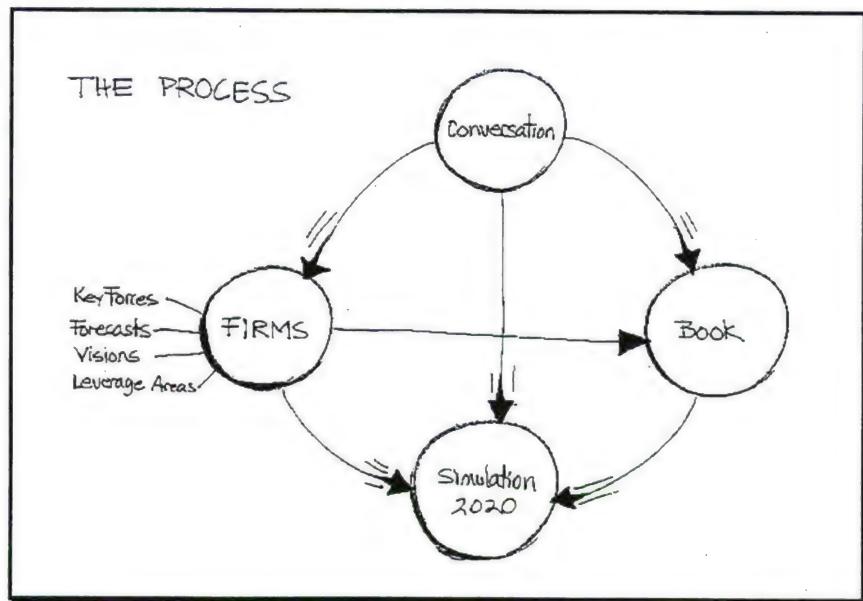
MHSS 2020 proceeded during the first year in two distinct phases. Phase I began in January 1996 and was completed in May 1996. It involved discussions by the MHSS 2020 participants in 20 work groups as they trained and analyzed future trends relative to their defined specialties and disciplines. This phase provided the opportunity to learn how to effectively communicate and operate in the context of cyberspace. Group tasks focused on defining key forces and developing forecasts, visions, and leverage areas associated with the groups' respective specialties. The groups represented areas such as critical care, warzone medicine, technology, radiology, mental health, bio-engineering, wellness, the physical and social sciences, and leadership.

Phase II started 6 June 1996 and continued through mid September 1996. During this phase, participants were cross-leveled from the 20 intra-disciplinary work groups into 10 inter-

disciplinary groups. The goal of each group was to develop an integrated story of how the future might unfold in specific areas of military relevance and within the context of four specific scenarios: The Third Wave, The Dark Side, Global Mind Change, and the Transformation.

## ES-4 Nurturing the Fruit

The processes developed for MHSS 2020 have been unique in a number of ways. The entire project was structured around interactive discussions occurring via the World Wide Web. There has been a focus on capturing the critical artifacts of the entire process. The outcomes of the "conversations" have become the assumptions and input variables for the simulation models of the MHSS in 2020 and also formed the basis of this document. The process brought together clinical and administrative leaders, both public and private sector, to explore the future of military health. The tools for MHSS 2020 were designed to synergistically reinforce and support each other. The ongoing conversation between 200 participants, over a nine-month period, resulted in a set of alternative MHSS scenarios. An automated, dynamic simulation tool was used to explore the behavior of the MHSS over a 25-year period.



Trend analysis and scenario development gave us a basis and framework for development of visions and strategies. Exploring trends allowed us to gain insight into patterns of change over time and gain an awareness to emerging threats and opportunities. Developing alternative scenarios of what society, health care, and the MHSS might look like in 25 years allowed us to explore how conflicting and interacting sets of trends might lead to a range of alternative futures. Scenarios allowed us to consider a broader range of possibilities than are

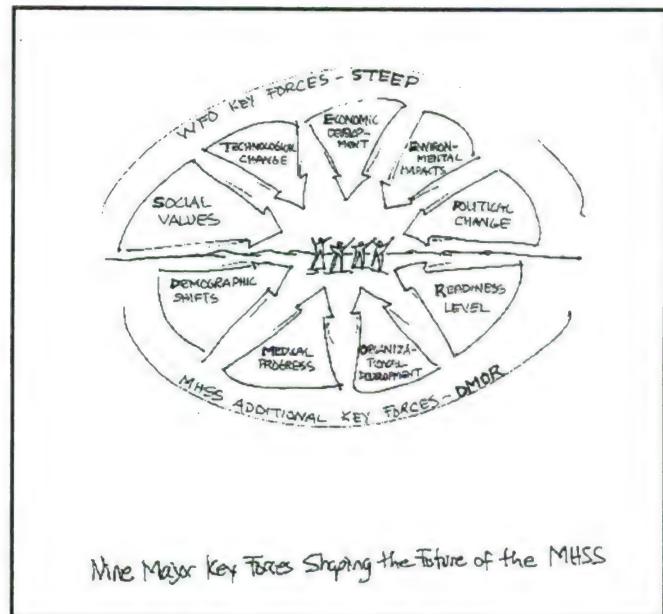
usually considered in traditional strategic planning. The scenarios also gave us an imaginative framework for clarifying our highest aspirations, our vision of the best that might be, and for exploring strategies to achieve the vision, a vision that represents the collective commitment of our entire culture.

## ES-5 The Fruit

The fruit of our labor is embodied in the key themes and megatrends generated during the first two phases of MHSS 2020, and in the alternative scenarios of the future MHSS. In this section we provide a summary of these themes followed by a summary of our four views of what the world and the Military Health Services System (MHSS) might look like in the year 2020.

Phases I and II led us to conclude that there were nine global key forces that would have the greatest impact on future global conditions and on military health. Five of these key forces have traditionally been used by futurists. They are social, technical, economic, environmental, and political forces. Additional key forces, identified during the on-line discussions, are demographic, medical, organizational, and readiness issues.

While the four scenarios explore widely divergent images of the world and the MHSS in 2020, they also share a number of key themes. These themes deal with "megatrends" that the 2020 participants believe will be important in any plausible future. The character of the four MHSS 2020 scenarios is largely determined by different responses to these megatrends. Each of these themes appeared in at least three of the four scenarios, and most appeared in all four.



## **ES-5.1 Global and US Developments**

The underlying global megatrends point to an increase in global population growth, immigration, and the continued graying of America. There will be significant pressures on the environment from population and economic growth. We will continue to see a shift to an information based society with a strong emphasis on education. The gap between rich and poor will continue to increase. We will see a growth and "Globalization" in the world economy.

## **ES-5.2 Military Context**

The military themes appearing throughout the various groups centered around increased weapons capabilities, based on integrated information systems, and well equipped and trained service members characterized by mobile, flexible, light units. There will be increased threats in the areas of low intensity conflict, a major regional conflict, and a proliferation of chemical and biological weapons capabilities throughout the world. We will see no growth in the US Armed Forces and perhaps more downsizing. There will be accelerated development and application for non-lethal weapons. Information warfare and counterwarfare will become a central focus.

## **ES-5.3 US Health System**

The US health system will continue to see growth in managed care, an increasing emphasis on providing information to consumers for self care and telehealth applications, and continued development and use of outcome measures. We will see continued pressures for cost containment. As a consequence of these trends, more emphasis will be placed on wellness, customized care based on unique genetic and behavioral characteristics, smaller and fewer facilities, and fewer health care professionals. The most significant biomedical threats will be in the form of new viruses and antibiotic resistant microorganisms. The role that spirituality and mental health play in one's overall wellness will be embraced throughout the health community. Healthy communities will be planned, designed, and created.

## ES-5.4 Military Health

Military health will see continued movement toward an integrated defense health organization. There will be a much larger role for health operations other than war in terms of critical importance and frequency. We will see continued constraints on budgets to support military operations and military health and the probable outsourcing of most non-active duty health care by 2020. Biotechnology, and technology in general, will be exploited to leverage capabilities. The electronic medical record will become a reality. There will be significant advances in warzone medicine. In 2020, the MHSS will routinely employ genetic engineering in identification, prevention, and intervention to maintain healthy service members and healthy communities.

## ES-5.5 The Scenarios

In the following section, a short description of each scenario is presented followed by a discussion that summarizes the key developments in military health associated with that scenario. A matrix describing the key characteristics of the world and military medicine in 2020 across each scenario is attached.

The first scenario, **The Third Wave**, is a positive extrapolation of the present. It contains potentially dangerous developments, but on the whole it represents the optimistic side of current expectations.

*MHSS in 2020 - Military medicine is based on the Third Wave principles of demassification, decentralization, customization and integration. Warzone medicine operates from mobile platforms using advanced technologies such as auto self-aid systems, personal status monitors, smart assistant terminals and trauma pods. Health operations other than war have expanded to provide disaster relief and peacekeeping support. The MHSS provides care for active duty members and their family members, with other care shifted to Medicare or privatized. The MHSS provides advanced care and training geared to the "Forecast, Manage and Prevent Paradigm" and extensive use of telehealth.*

The second scenario, **The Dark Side**, extrapolates today's problems and fears into a negative future. It is a more dangerous and alarming future than we usually like to imagine. It is unlikely that the future will contain this much "bad news," but taken individually, most aspects of this scenario seem disturbingly plausible.

*MHSS in 2020 - The MHSS is struggling to provide services for a total military force as large as it was in 1996 but with half of the personnel and budget of those years. Misinvestments in technological dinosaurs and stagnation in research and development spending limited technology development for military health. Modest advances have occurred in warzone medicine. Health operations other than war grew at the end of the century, but then were largely restricted to the US. MHSS adapted to budget cuts in many ways including outsourcing non-active duty care, privatizing many capabilities, and decreasing fixed facilities; but, many MHSS operations remain redundant and inefficient. The emphasis in training has shifted to preparing people to function effectively with minimal resources*

The third scenario, **Global Mind Change**, challenges traditional assumptions about what a successful future could be like. Cooperative efforts to resolve and suppress conflicts and promote cooperative sustainable development prove reasonably successful, forcing a fundamental rethinking of the role of military forces and military medicine.

*MHSS in 2020 - International conflict has diminished sharply, forcing a fundamental rethinking of the role of military forces and military medicine. Despite these changes, warzone medicine remains essential. Major technological innovations have helped adapt warzone medicine to today's very different patterns of conflict. Research and development in military medicine has had important spin-offs, such as the low-cost personal biomonitor that were made possible by Defense Advanced Research Projects Agency's research on Personal Status Monitors. The greatest MHSS innovation over the past generation was creating the world's preeminent capability for health operations other than war. The MHSS played a critical leadership role in making it possible for DoD to take on this mission as a major role. Health operations other than*

*war have expanded beyond disaster relief and peacekeeping support to include health infrastructure development and other aspects of sustainable development and nation building. All day-to-day health care has been subsumed in a privatized universal health coverage program.*

The final scenario, **The Transformation**, was intentionally left sketchy at the start of the on-line discussions. Participants were challenged to fill it in with ideas about the “outer edge” of what might be possible by 2020, given a transformation of technology and highly positive social circumstances. It is unlikely that the future will contain so much “good news,” but the scenario contains potential developments of enormous importance, and it served to help participants clarify their vision of “the best that could possibly be.”

*MHSS in 2020 - Both military medicine and US health care have been reshaped by a transformation of technology. “Health coach” software agents with high level artificial intelligence learn from experience how to shape healthier behavior in the people who use them. Ultra-miniature nanotechnology “cell herding machines” heal wounds rapidly, while “immune machines” that move in the blood stream can be programmed against any diseases identified in world medicine. Even as the need for warzone medicine is decreasing sharply, it is being revolutionized by advanced technology. Health operations other than war have become the central focus of military medicine. The MHSS maintains its national operations, but is also the lead participant in the Global Military Health Services System within the UN structure. Because the MHSS offers access to leading edge health technologies, it continues to provide health care for all military personnel, active, reserve, and retired.*

## **ES-6 Taking the Fruit to Market**

In Phase III, beginning in Fiscal Year 1997, we will continue to explore military health futures by disseminating the results of MHSS 2020 efforts to date and by integrating MHSS 2020 with organizations working in the broader environment of 21st century warfare, anti-war, and health systems. Phase III will also see the implementation across the MHSS of the collaborative learning tools developed during Phases I and II. We will continue to explore future

trends and breakthrough technologies, especially in the biotechnology and genome research areas.

## **ES-7 A Final Word - Beware of the Locusts**

The forecasts developed to date are the reflection of the MHSS 2020 participants. These views are the collective views of the work groups and do not necessarily reflect the policies or views of the Department of Defense nor the military Services. This document is not a resource planning document. The assumptions expressed or implied in this document are potentially a starting point for more robust and detailed analysis for the MHSS. Finally, a caution concerning the difference between predicting and forecasting. This is not a predictive document, nor are any of the simulation and other modeling tools developed during MHSS 2020 predictive tools. The tools developed by MHSS 2020 provide leaders with an opportunity to gain insights into a very dynamic and chaotic military health system. The hope is that through the implementation and use of the tools developed during MHSS 2020, and the continued exploration of alternative futures, we will gain additional insights and be more empowered to make the resource and investment decisions today that will lead us to a better tomorrow.

## Matrix of Four MHSS Alternative Futures

	THE THIRD WAVE	THE DARK SIDE	GLOBAL MIND CHANGE	THE TRANSFORMATION
<b>Basic Character</b>	The optimistic side of current expectations.	A negative extrapolation of current problems and fears.	Progress in technology, conflict resolution, and sustainable development forces a rethinking of the military's role.	The "best that could possibly be" given a transformation of technology and favorable social conditions.
<b>Global Situation</b>	Rising rich-poor tensions, but the rapidly growing world economy is a powerful unifier. Knowledge, coordination and creativity are keys to success in Third Wave economies. Ample supplies of oil and food.	Rich nations grow slowly, but many poor nations are in a "death spiral" of exploding populations, declining incomes, environmental destruction, and internal conflict. Rage against the rich.	Middle East oil crisis, Chinese food crisis, new electronic participation forums, and local innovations catalyze change. Increasing cooperation to create a world that works for everyone for the long run.	World leaders are traumatized by worsening chaos. Momentous advances occur in computers, biotechnology, nanotechnology, etc. A realization spreads that human society is moving to an entirely new level of capabilities.
<b>Conflict</b>	Threat of major regional conflict remains, but none occur. Increasing numbers of low-intensity regional conflicts with more deployments of US forces. Increasing terrorism.	Communist resurgence. Expansionism in China and India. Brief Korean clash. Nuclear weapons used in Mid-East. Many more low-intensity regional conflicts. Terrorists cause mass casualties. An information warfare arms race.	Threats of major regional conflicts, terrorism and information warfare increase, but then fade after 2010. Low-intensity conflicts continue, with growing success in preventing and limiting violence.	A ruinous China-India War. Rise of "super-terrorism" with weapons of mass destruction. But conflicts deflate as nations recognize that universal plenitude is nearly inevitable—if self-destructive violence can be avoided.
<b>US Health System</b>	Central focus on primary care and prevention. Growth of telehealth systems. Major biomedical advances. Growing customization of	Central focus on care for an older, sicker population. Rising costs and budget cuts. Rationed care for most, good care for 30% who "buy up."	Focus on wellness, prevention, self-care, and healthy communities. Rapid telehealth growth. Electronic home health services. Fewer health	Focus on higher functioning and spiritual growth. Healthy lifestyles. Biomedical breakthroughs. Emergence of nanomedicine. Highly integrated, community-

	THE THIRD WAVE	THE DARK SIDE	GLOBAL MIND CHANGE	THE TRANSFORMATION
	care to the individual. More vertically integrated delivery systems. Improved health status.	Many medical indigents. Fragmented delivery system. Lower health status.	professionals. More alternative therapies. Highly integrated systems. High health status.	focused delivery systems. Very advanced home services. Highly customized care. Life extension.
<b>Warzone Medicine</b>	Operates from flexible, light, mobile versatile platforms. Uses minimal-footprint just-in-time logistics. Streamlined echelons of care and evacuation. Auto self-aid systems. Personal status monitors that communicate location, injury alerts, vital signs. Smart Assistant Terminals for field medics. Trauma pods with auto life support for evacuation to site of definitive care.	Only modest technological advances such as more effective hemostatic bandages, airway maintenance and fluid replacement. Cutbacks in training programs reduce morale and retention and lower quality of the medical force. Training emphasis shifts to prepare people to function effectively with minimal resources.	Warzone medicine remains important. High levels of readiness adapted to diminished and different patterns of conflict. Advanced technologies similar to The Third Wave. The Defense Advanced Research Projects Agency's R&D on personal status monitors leads to widespread public use of low-cost personal and home biomonitor.	An era of unparalleled progress in warzone medicine, even as the need for it declines. Artificial intelligence applications include the Hospital-on-the-Wrist and auto-guided trauma transport. Nanotechnology for rapid healing devices, artificial immune systems. Biotechnologists produce organ replacements. Consciousness technologies improve capabilities
<b>Health Operations Other Than War (HOOTW)</b>	Expanded for responding to domestic and international disaster relief and for supporting peacekeeping operations.	Growth near the turn of the century, but then mainly restricted to the US. HOOTW operations hampered by poor support and bureaucratic infighting.	HOOTW elevated to a central, ongoing mission. Partnering with others for International Rescue Missions to prevent health and development breakdowns. Assistance in nation-building to design a system to identify and remove causes of ill health and insecurity.	HOOTW is the main focus of military medicine. US forces play a major role in the UN HOOTW force, which has earned great respect around the world.
<b>Health Systems for Military</b>	MHSS provides comprehensive care	Decline in MHSS services. Enlisted	Day to day care for active duty members,	MHSS continues to provide care for all

	THE THIRD WAVE	THE DARK SIDE	GLOBAL MIND CHANGE	THE TRANSFORMATION
Communities	for active duty members in the direct care system. Care for family members, retirees, reserves through second generation TRICARE using a network of direct and private sector resources.	men and women remain within the direct care system, but officers have the option to receive care outside the MHSS with family members, retirees and reservists.	family members, reservists and retirees subsumed into the privatized universal health coverage system put into place in 2002.	military personnel, active, reserve and retired. Its effective use of so many leading edge health technologies made it the provider of choice.

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## SECTION 1.0 INTRODUCTION

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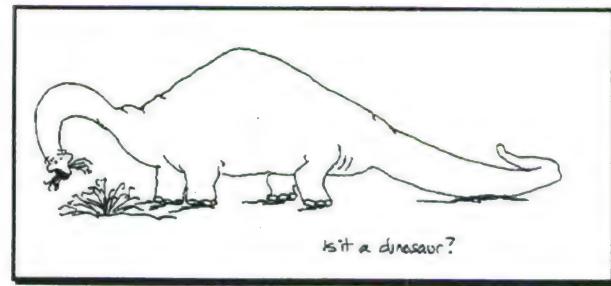
This section describes the genesis of the MHSS 2020 project, the project charter, the process used in performing the study and the products that resulted. This section also provides a brief overview of the contents of the remaining sections of the book and the appendices.

### 1.1 The Genesis of MHSS 2020

The genesis of MHSS 2020 can be traced to a paradoxical statement made by a senior medical officer during a medical facility inspection in 1994. While reviewing the newest multi-million dollar tertiary care medical center in the MHSS inventory, the senior officer questioned whether this newly constructed DoD medical facility was already obsolete in terms of how health care would be practiced in the future; was it already a dinosaur? He wondered whether or not DoD would ever build a facility like this again and, if not, what the MHSS facilities of the future would look like.

*What is the function and form of the health facility of the future?*

*What is the health system of the future?*



This question was initially posed to a group of health facility planners, who in turn, asked the senior officer for a description of the health system of the future. The senior officer then challenged the health facility planners to define a process that would provide the answers to these questions. What resulted was a bold, unprecedented approach to examining the alternative futures of the MHSS.

### 1.2 The MHSS 2020 Charter

MHSS 2020 was formed to explore forces shaping the evolution of health care and to promote a seamless integration

*MHSS 2020 was chartered to create an ongoing process that explores long term visioning and strategic MHSS requirements.*

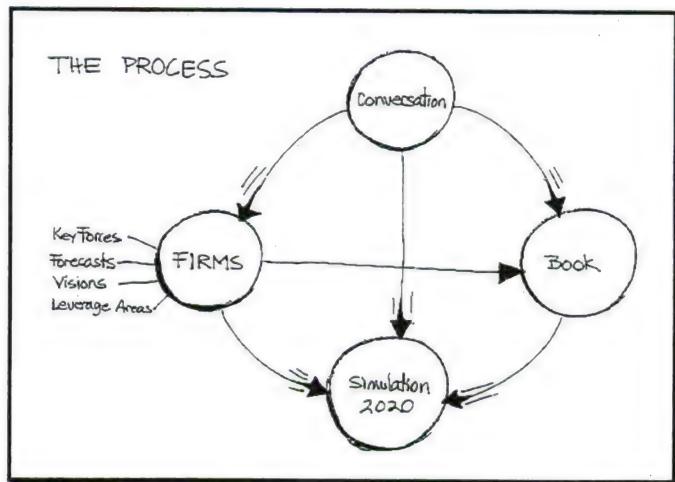
from individual fitness to warzone operations. MHSS 2020 complements the five-to-seven year horizon of the MHSS Strategic Plan by envisioning potential changes in the practice and delivery of military health care from now until the year 2020. The project, consistent with its theme, envisions potential future conditions to enable today's MHSS resource decision makers to make better long term decisions. The MHSS 2020 process has been supported by a group composed of national and international, public and private sector health care experts. The MHSS 2020 working group is a subcommittee of the MHSS Strategic Planning Committee and oversight is provided by the Deputy Assistant Secretary of Defense for Policy and Planning Coordination.

## 1.3 MHSS 2020 Process

This section describes the overall study design and processes, the project phases, the organizational infrastructure, membership selection, and the cyberspace work environment.

### 1.3.1 Study Design

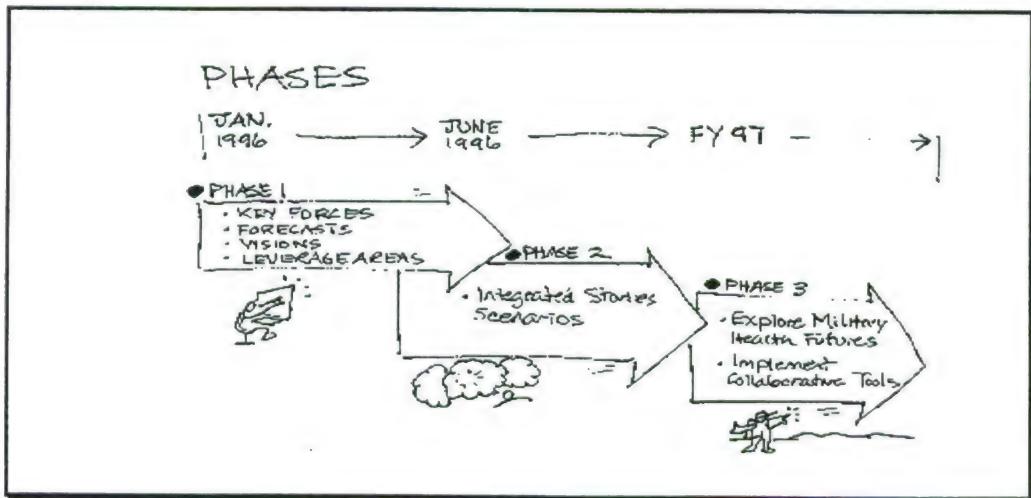
The processes developed for MHSS 2020 are unique in a number of ways. First, the entire project was structured around discussions occurring via the world wide web. Second, there was a focus on ensuring a methodology for capturing the essence and critical artifacts of the on-line conversation. Third, the outcomes of the conversations became the assumptions and input variables for simulation models of the MHSS and also the basis for this document. Fourth, the design brought together clinical and administrative specialists, both public and private sector, initially to explore military health futures within the context of their respective specialties, and later cross leveled into inter-disciplinary groups that developed scenarios based on relevant military topics and issues. Fifth, the on-line conference was conducted over a nine month period. Finally, each component part of the process supported all the others. None were mutually exclusive.



MHSS 2020 deliberately set out to foster rigorous and creative discussions between its members. The process stimulated a rich and robust dialog on future conditions that may confront the MHSS. An MHSS 2020 project support team carefully monitored conversations in order to harvest insights about the future and to describe key relationships. Except for two symposiums and one workshop, all work was done in cyberspace. This allowed the participants to minimize travel costs and to engage in the process at any time convenient to them.

### 1.3.2 Phases

MHSS 2020 is being executed in three phases. Phase I, which began in January 1996, involved discussions in 20 work groups (approximately 200 expert participants) as they trained and analyzed future trends relative to their defined specialties and disciplines. That phase, which was completed in May 1996, provided the groups with the opportunity to learn how to effectively communicate and operate in the context of cyberspace. Group tasks focused on defining key forces, and developing forecasts, visions, and leverage areas associated with the respective specialties. Groups addressed such areas as critical care, warzone medicine, technology, and leadership. The complete list of the Phase I work groups is in Table 1-1.



**Table 1-1. Phase I Work Groups**

<b>Phase I Work Groups</b>	
Bio-Engineering/Genome/Basic Research	Critical Care/Emergency Medicine
Dental Specialties	Generic Patient/Home Care Nursing
Integrated Medical Records & Beneficiary Data	Leadership/Management
Legal/Ethical/Reform Implications	Logistics/Pharmacy/Transportation
Medicine/Immunology/Infectious Diseases	Mental Health & Social Work
Patient Monitoring & Staff Management	Pathology/Laboratory
Pharmacology	Radiology & Diagnostic Technology
Surgical Specialties	Telemedicine/VR Simulation/Telecommunication
The Future: Physical & Social Sciences	Training/Force Integration
Warzone Medicine	Wellness & Preventive Medicine

Phase II started 6 June 1996 and continued through mid September 1996. In this phase, participants were cross-leveled from the 20 intra-disciplinary work groups into 10 inter-disciplinary groups. The complete list of the Phase II work groups is in Table 1-2. The focus for this effort was to have each group develop an integrated story of how the future might unfold in areas of specific military relevance within the context of four scenarios:

- The Third Wave
- The Dark Side
- Global Mind Change
- The Transformation.

These scenarios are discussed in detail in Section 3.

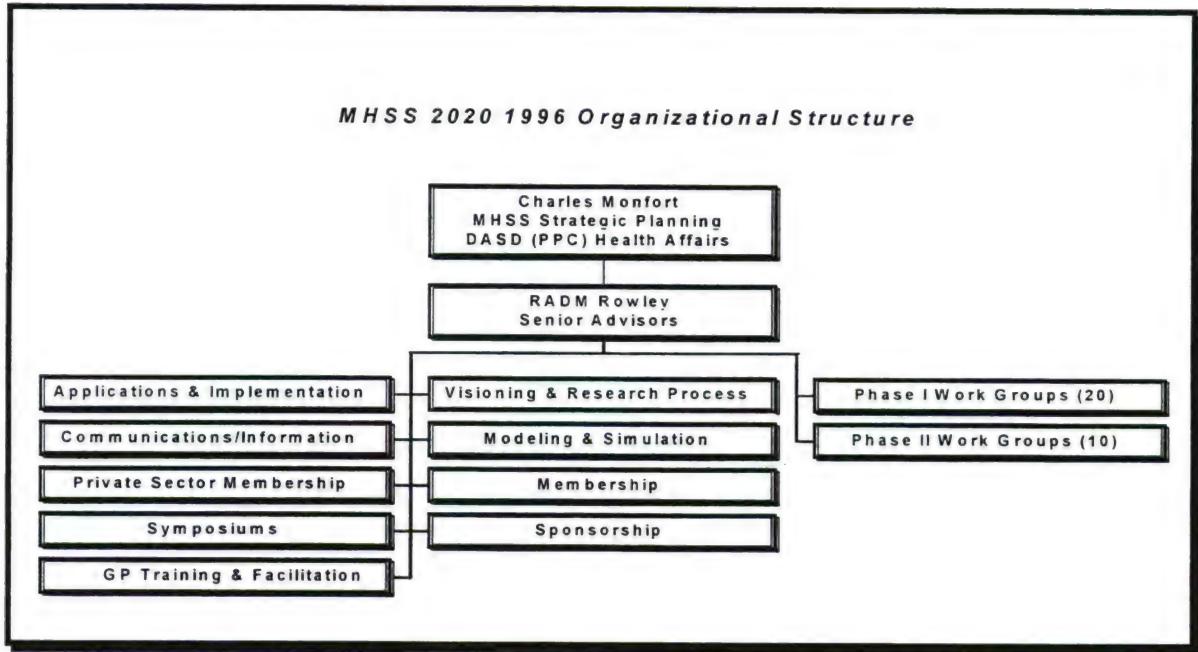
**Table 1-2. Phase II Work Groups**

<b>Phase II Work Groups</b>	
Future of the Global Community	Combat
US Health Systems	Warzone Medicine
Health Operations Other Than War	Health Systems for Military Communities
Military Health Personnel/Leadership	Military Health Technology
Military Health Platforms/Infrastructure	Military Health Funding Patterns

Phase III, beginning in fiscal year 1997, will continue to explore military health futures by disseminating the results of MHSS 2020 efforts to date and by integrating MHSS 2020 with organizations working in the broader environment of 21st century warfare, anti-war, and health systems. Phase III will also see the implementation of a set of collaborative learning tools across the MHSS and continued exploration of future trends and breakthrough technologies.

### **1.3.3 Organizational Infrastructure**

As indicated in Section 1.2, MHSS 2020 is a working sub-committee of the MHSS Strategic Planning Committee. The organizational structure developed to support the overall effort consisted of the Chairman and group of Senior Advisors that included representatives from OSD Health Affairs and the military Services. The structure also included nine sub-committees that facilitated and supported the work of project participants. The organizational structure is depicted in Figure 1-1.



**Figure 1-1. MHSS 2020 Organizational Structure**

### 1.3.4 Membership Selection

Potential work group members were identified by the Senior Advisors through a series of meetings in November and December 1995. The advisors identified potential participants based on their reputation, expertise, and perceived willingness to allocate time to support the MHSS 2020 goals and objectives. Additionally, the Veterans Administration, academic institutions, and private sector health care organizations were invited to nominate participants. The Senior Advisors confirmed all participant selections.

### 1.3.5 Cyberspace Work Environment

As stated earlier, except for the two Symposiums and one workshop, the majority of the MHSS 2020 working group deliberations on the future were conducted at the MHSS 2020 "Virtual Conference Center." Members accessed two servers on the world wide web. One server provided a repository of information that included a clipping service, membership database, book and article reviews, and other on-line resources. The other server provided the software to support actual deliberations. The virtual conferencing capability was available 24 hours a day, seven days per week. This medium, on the cutting edge of technology, presented

challenges for participants in terms of connectivity, speed of transmissions, and learning to work in a virtual environment.

## 1.4 Products

The MHSS 2020 charter prescribes five products from the MHSS 2020 efforts. Each of these products is a unique vehicle to provide insights into the future of military medicine.

- **MHSS Future Scenarios (The Book).** This book provides four scenarios of very different possible futures for military health. These scenarios are a tool for ongoing use. Using them in training exercises and planning efforts throughout the MHSS can help bring short-term policy and investment decisions into alignment with long-term goals. At the September 1996 symposium of MHSS 2020 participants, the scenarios were used in a series of exercises to generate an initial MHSS 2020 vision, strategies for achieving the vision, and near-term recommendations. The results of this first use of the scenarios are summarized in the document. These results illustrate the kind of far-sighted and creative thinking that the scenarios can generate as they are used by groups within the MHSS and other organizations.
- **Semantic Model.** The Semantic Model is a tool used to capture ideas and relationships during the entire nine month 2020 on-line conversation. The conversational model, called the Futures Information Relational Modeling System (FIRMS) identified four types of elements: Key Forces, Forecasts, Vision, and Leverage Areas. The FIRMS model, housed in a relational database with a graphic interface capability, provided query and sort capabilities that facilitated examination of the nature and essence of the on-line conference by identifying numerous, complex relationships.
- **Non-linear dynamic model.** The dynamic model, SIM 2020, is a non-linear, continuous simulation of the military health system over a 25 year period. The model is built around projected demographic data and incorporates clinical

components, resources, and performance metrics. The model includes multiple-loop feedback mechanisms that describe critical relationships which are counter intuitive and system counteracting, are resistant to policy change, and possess critical leverage points on a long term continuum. A single model with four different sets of parameters for each overview scenario was developed.

- **Health Futures Repository.** An on-line repository houses a complete index of world wide web links to health futures materials and a variety of other information. Specific on-line resources available to the working groups included: a clipping service, a membership database, a static representation of the FIRMS model, articles, book and article reviews, a graphic repository, a link to Grateful Med, and a graphic and report representation of the MHSS 2020 symposiums.
- **Trained Military Health Futurists.** MHSS 2020 trained 200 health experts to be futurists. As such, they are able to effectively discern the futures related significance of evolving trends and key events.

## 1.5 Navigating The Book

Section 2 of this report, On Futures Thinking, provides a framework for thinking about the future and describes the tools and techniques used in MHSS 2020 to explore the many uncertainties facing military health.

Beginning in Section 3, each section presents the scenarios at a greater level of detail. Section 3 presents the scenarios at the most macro level. Section 4 presents an abstract of each group's conversation and also provides a matrix analysis of key discussion elements related to global key forces identified in the Phase II conversation. Section 5 presents the report by the work group authors of their group's concept of the world in 2020 within the context of their specific topic areas. This is the most detailed portion of the entire report. As the reader progresses from Section 3 through Section 5, he will notice some redundancy as each section provides greater detail than the previous section. Many of these narratives are written from the perspective of being in 2020. Because of the complexity of presenting 160

disparate discussions from ten work groups addressing 40 topics, across four scenarios, the reader will be presented some graphic aids. A specific icon to represent each scenario is introduced in Section 3. Later, in Section 5, each work group is introduced with a unique icon. As the reader progresses through each topic, the icon representing the work group will be presented to the left of the topic's title, and the icon representing the scenario will be presented on the right. For example, all seven topics in US Health Systems will be presented in the first scenario. In the second scenario, they will be presented again, in the same order. The foldout page at the end of Section 5 is a ready reference page to help associate the work group and scenario icons.

Sections 6 through 9 summarize the results of an initial use of the MHSS 2020 scenarios in strategic thinking exercises. Section 6 presents the participants' vision of a preferred future for the MHSS. Section 7 describes strategies for achieving that vision. Section 8 highlights recommendations for near-term fiscal year 1998 actions. Section 9 presents conclusions.

A number of appendices have also been provided to provide a full view of work undertaken during the course of the project. Appendix A provides the conversational items that did not fit into the scenarios. Appendices B and C contain brief descriptions of the FIRMS and SIM Models respectively. Appendix D provides a description of the homepage found on the internet. Appendix E contains membership data from Phase I and Phase II. Appendix F contains the acronym list.

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## SECTION 2.0 ON FUTURES THINKING

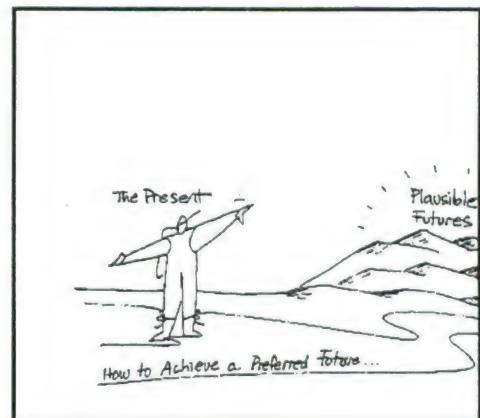
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This section of the book describes the process used by the MHSS 2020 participants to “think” about the future. Because there is no single long-term future (2020) out there to predict, what the future will be like depends largely on our own actions. Forecasting the future, therefore, requires a sophisticated process for establishing where we are, (trends and uncertainties in the present), where we want to be, and how we can go about getting there. Thus, the three components of this section are:

- The Present
- Plausible Futures, and
- How to Achieve a Preferred Future.

### 2.1 The Present

Phase I conversations in the MHSS 2020 process focused on key forces in the present that are influencing the future of both health care and the larger society. A conversational model was used to capture insights from these conversations. The model demonstrates that MHSS participants believe our society is confronted by an ever unfolding, almost chaotic set of inescapable uncertainties. It also reveals that participants believe there are nine key forces which will have the greatest impact on the future.

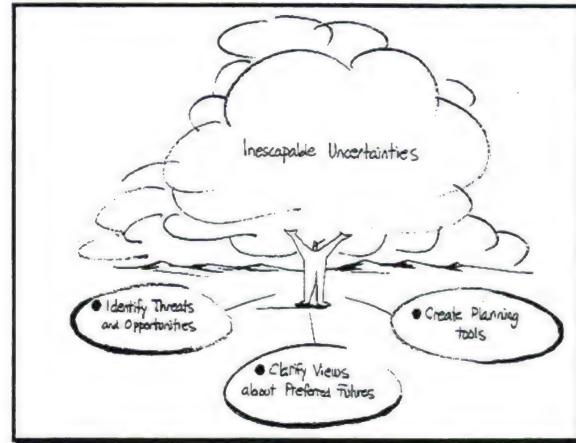


#### 2.1.1 Inescapable Uncertainties

All our experience is with the past, but all our decisions are about the future. Many leaders in government, health, and corporate America have traditionally assumed that their past experience is a fairly reliable guide to the future—the future will simply be a bigger and better version of the world with which they are familiar. Today, this kind of continuity cannot be taken for granted. Early in the MHSS 2020 project it became clear that enormous changes occurring

in the present are creating inescapable uncertainties about the future. Some of these changes include:

- The flaring of geographical, ethnic, and religious conflicts long suppressed by the cold war.
- Demographic shifts, including the aging of America and other industrial democracies, and a peaking of population growth and urbanization in poorer nations of the world.
- Globalization of the economy, creating new possibilities for rapid, peaceful economic development.
- New problems of conflict and the rapid spread of diseases on a global scale.
- The end of the era of Federal government growth, setting new limits on the role of the Federal government in health care.
- Military downsizing, creating enormous pressures to reduce spending on military health services.
- A restructuring of the entire US health care system, with new roles, organizational arrangements, and financial incentives.
- A looming crisis of health care costs, and a growing appreciation of the cost advantages of prevention over cure.
- Revolutionary developments in information technology, and the rise of computer literate younger generations.
- Rapid progress in biotechnology and biomedicine.



How these changes play out will have enormous impacts on military missions and military medicine. For example, it is possible that the future will bring increased US involvement in both limited regional conflicts around the world and larger conflicts. In these situations, warzone medicine will need to remain the central focus of military health systems. Yet, it is also possible that regional and large scale conflicts will abate over the generation ahead and health operations other than war will assume a larger role in military health than is currently being anticipated.

*General Gordon Sullivan, in his presentation at the February 1996 Futures Symposium, marveled that the last three significant military missions in his military career were led by water purification and medical resources.*

We know enormous changes are coming. The changes will make many current medical practices obsolete, but we do not know what these changes will be or when they will occur. There are two dangerous temptations in this situation: one is to hide from the discomforts of uncertainty by denying or minimizing the scale of change, and the other is to pretend that it is possible to predict the changes and then plan around them. Both of these approaches, however, are bound to fail because we are being engulfed by a storm of change from which we cannot hide, and there is no single, certain future to predict. MHSS 2020 is based on the belief that we need to acknowledge today's uncertainties without blinking or turning away. It is imperative to marshal the most powerful tools available to explore the uncertainties and deal with them effectively.

Rather than try to predict the future, MHSS 2020's approach to forecasting is designed to do three things: 1) develop images of plausible alternative futures and emerging threats and opportunities, 2) clarify views about the preferred futures of military health, and 3) provide planning tools for ongoing use within the MHSS. These approaches offer the best basis for decision making in situations of inescapable uncertainty.

## 2.1.2 The MHSS 2020 Conversational Model, FIRMS

MHSS 2020 created a semantic modeling system, FIRMS, to capture the essence of the various on-line conversations throughout the MHSS 2020 project.

The initial idea for FIRMS was taken from Professor Horst Rittel's Issues Based Information System (IBIS) technique developed at the University of California, Berkley. IBIS

models a conversation by identifying the issues presented in the conversation, positions taken on those issues, arguments about those positions, and supporting references. Additionally, IBIS documents all direct and indirect relationships in a graphic, tree-like, network format. MHSS 2020 leadership refined the IBIS methodology to deal with four different concepts: key forces, forecasts, visions, and leverage areas.

The FIRMS model, with a supporting graphical user interface, allows users to better grasp the more than 5,000 complex semantic relationships that emerged in the conversations during the MHSS 2020 project. It provides query and sort capabilities that allow insight into the nature and essence of the on-line conference.

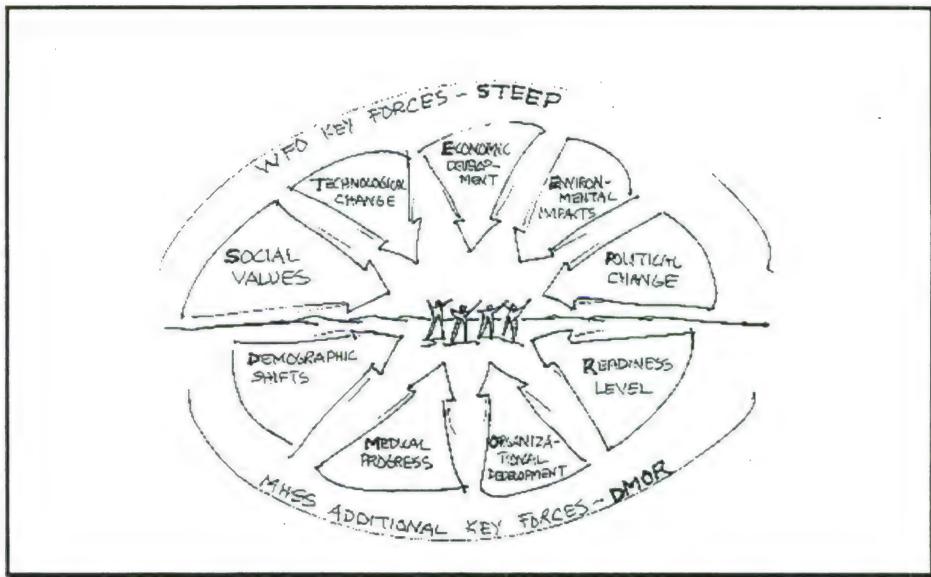
Analysis of the MHSS 2020 conversations, using the FIRMS model, shows that participants believe nine key forces in the present will have the greatest impact on the future of military health. Five of these key forces are exactly those traditionally used by futurists:

- ***Social values***, world views, aspirations, problems, and conflicts
- ***Technological*** change
- ***Economic*** development
- ***Environmental*** impacts
- ***Political*** change

Four of these key forces came out of the participants conversation.

- ***Demographic*** shifts
- ***Medical*** progress
- ***Organizational*** development
- ***Readiness*** issues

These nine key forces came to be called, STEEP-DMOR. In Section 4, the 160 topics identified during Phase II have been abstracted using these STEEP-DMOR key force categories.



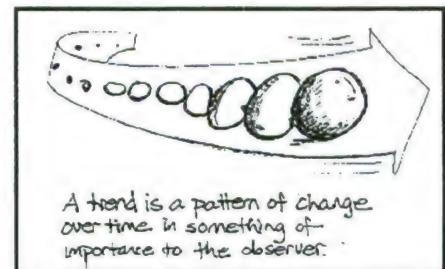
## 2.2 Plausible Futures

The MHSS used a number of techniques to develop images of plausible alternative futures. Trend analysis helped us gain insight as to where we might be headed. Scenario development provided us with integrated stories of what could be. And, simulation modeling facilitated "what if" drills.

### 2.2.1 Trends

Understanding key trends can alert us to both threats and opportunities. "Trend is not destiny," as the biologist Rene Dubos said. Early awareness of trends makes it possible to consciously head off dangers and accelerate positive developments.

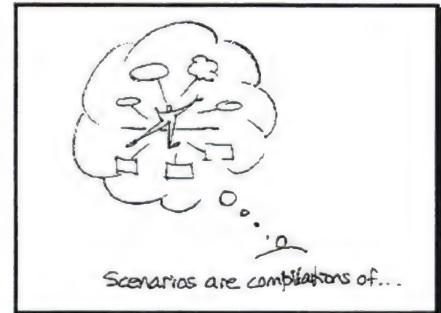
Trends focus on change in specific topics such as military budgets, drug breakthroughs, or health care finance. However, different trends often move in conflicting directions: some parts of the budget go up while the overall budget goes down; or more effective drugs become



available but fewer people can afford them. As a result, interpreting the meaning and significance of individual trends is not easy. Scenarios and simulation models can help clarify the implications of multiple and often conflicting trends.

## 2.2.2 Scenarios

Scenarios are compilations of trends which present differing, more comprehensive images of plausible future conditions. Scenarios may be used to evaluate how conflicting trends and interacting sets of trends might lead to a range of alternative futures. Scenarios allow their users to consider a broad range of possibilities. The use of scenarios began in the military itself, and has become an important methodology in both corporate and public sector planning.



Scenario building provides insight into our personal belief system and facilitates our exploration of the future. Thinking in terms of several alternative futures allows us to clarify our underlying assumptions by contrasting them with other plausible assumptions. Instead of holding a single implicit image of where things are probably going, several explicit and distinctly different images of plausible futures are considered. This way of thinking expands our awareness and the range of events and issues considered. We find ourselves reviewing the news, events in our work life, and personal experiences in a new way as we constantly consider whether events appear to be moving toward one scenario or another. We see opportunities, as well as possible threats, that we never noticed before because they were outside what we considered the realm of possibilities.

Figure 2-1 illustrates the desirable characteristics of scenarios for the future of military health. The four scenarios we discussed in MHSS 2020 represent four plausible paths into the future. The inner cone represents the area of plausible futures, including the most probable future. The outer cone, possible futures, includes wild cards. In situations of large-scale change and high uncertainty, scenario sets should cover a broad range of possibilities, not just minor variations. A good set of scenarios will often include a best guess extrapolation of current trends, a more optimistic alternative, one or more negative scenarios, and one or more

structurally different scenarios which challenge current assumptions about what a successful future would be like.

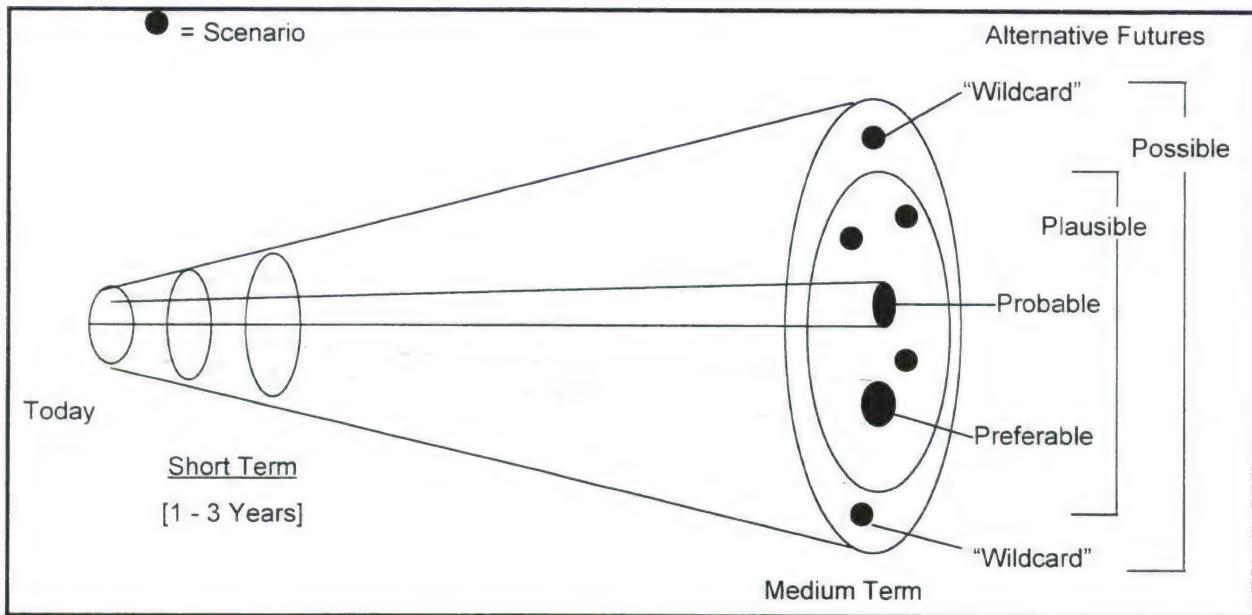


Figure 2-1. Plausible Futures

### 2.2.3 Simulation Model, SIM 2020

A simulation model, SIM 2020, was developed to provide MHSS leaders insight into the behavior of the military health system over a 25 year period. The model contains four separate sets of parameters based upon the conversations of the MHSS 2020 participants across the four scenarios. The model includes a number of variables in which users can choose to make different investments over time (and space). This allows participants to gain insights into the complex dynamics of the health care system. The SIM 2020 primary components are:

- Population demographics
- Payer mix (Fee For Service vs Managed Care vs Government vs No Plan)
- Health care system elements
- Five different technology components
- Environmental improvement

- Life style and behavior modification
- Infrastructure investment
- Health premium adjustments
- Co-pay modifications
- Preferred profit margins
- Economic behavior.

The model is not predictive in nature, rather, it allows users to gain an appreciation for how major components of the system may change and influence each other over time. A decision to promote healthy lifestyles, for example, increases utilization and cost of health care services in the early period of its implementation but pays huge dividends later in the simulation. The model allows the user to assess different strategies over time to see what works, and what does not. More information about the SIM 2020 model is at Appendix C.

## 2.3 How to Achieve a Preferred Future

A preferred future is established by creating a compelling vision and pursuing that vision through robust strategies. Progress towards a preferred future will come in allowing many different groups to think strategically and creatively about the nature of a preferred future and strategies for getting there. It is hoped that the tools for visioning and strategic thinking developed in MHSS 2020 will be widely shared within the military health community.

### 2.3.1 Vision

Using scenarios and simulation models keeps us constantly aware that there are many future possibilities, and that what happens will be shaped to a significant degree by what we do. This awareness shifts the focus of futures thinking away from predicting the future toward inventing and creating the kind of future we prefer. Our actions are likely to be most effective when they are driven by

*A vision is a compelling, inspiring statement of the preferred future which the authors and those who subscribe to the vision want to create.*

our highest aspirations and our vision of the best that might be, and represent the collective commitment of our entire culture.

While scenarios are “futures for the head,” that help us think systematically about future possibilities, visions are “futures for the heart.” Visions touch us and move us to action. A living vision—as opposed to merely words on paper—is something that people share, feel deeply about, believe possible, and commit themselves to achieving. Methods to deliberately create visions are new, but throughout history, few forces have been as powerful in human affairs as the gap between what is today and inspiring visions of what could be.

Throughout MHSS 2020, statements about the preferred future were identified and captured in FIRMS, the conversational model. Additionally, in the September symposium, participants will again have the opportunity to articulate their preferred vision of the future. Those visions will be captured and presented in Section 6 of this report.

### 2.3.2 Strategies

The concept of “strategy” only makes sense in the context of ends to be achieved and circumstances to be encountered. Visions and scenarios provide a context for supporting high level strategic thinking. When we have a vision, strategies are needed to focus our efforts on achieving the vision.

*Strategies are the most important sets of actions we must take to achieve our vision*

Using scenarios helps us stimulate creative thinking about visions of the preferred future. A vision provides a basis for selecting appropriate strategies. Scenarios can also help us evaluate different strategies and identify especially robust strategies that make sense across a wide variety of future conditions. Leverage areas, areas where our actions can have the largest impacts on the future, were captured and modeled throughout the MHSS conversation and were captured in the FIRMS model.

### 2.3.3 The Best Way to Forecast the Future

Taken together, the tools and techniques marshaled by MHSS 2020 were the most powerful available for exploring the future. The approach taken in the project assumes that the future cannot be predicted in detail, but can be explored and influenced.

*"The best way to predict the future is to create it."*

Alan Kay

## SECTION 3.0 OVERVIEW SCENARIOS

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This section will describe the four scenarios that were developed in MHSS 2020. These scenarios are the integrating force for much of the work done to date in the project. They incorporate ideas developed in the on-line discussions and captured in the FIRMS model. They provide the basis for the SIM 2020 model which simulates the results of policy and investment decisions in the four alternative futures. They were used by project participants in initial exercises on visioning and strategy development, producing the results reported in Sections 6, 7, 8, and 9 of this report. They can be used by other groups throughout the MHSS to develop and test strategies and clarify views of the preferred future.

### 3.1. MHSS Scenario Development

Scenarios can be written at very different levels, ranging from global developments to close-in developments within an organization and its operating environment. For MHSS 2020, very broad scenarios were created that provide a “Big Picture” of potential future developments. The scenarios portray changes in areas ranging from technology and global politics to organizational arrangements and funding levels for military health. Systematic thinking about both the “strategies that work” in individual scenarios and the robust strategies that make sense in all the scenarios can generate a wide range of strategic options. Reflection on aspects of these scenarios that seem both good and possible can help clarify a strategic vision of the preferred future.

On-line discussions in Phase I of MHSS 2020 dealt primarily with key forces and trends shaping the future of military medicine. Drawing on those discussions, and working with the project’s senior advisors, the Institute for Alternative Futures (IAF) prepared four preliminary scenario drafts to structure the Phase II discussion of alternative futures. Four scenarios were developed because research and experience have shown that while individuals can keep track of seven or more scenarios, four is the maximum number that groups can easily work with.

In Phase II, participants worked in ten topic-focused groups to consider what these four directions of evolution into the future would mean for warzone medicine, health operations other

than war, health systems for military communities, and other important topics. Writers in each of the ten groups summarized the discussions. Then key points from the discussions were used to flesh out the sketchy initial scenarios, and provide the more detailed, substantive scenarios presented here. Because the future is highly uncertain, the four scenarios were intentionally designed to span a broad range of potential future conditions. Although the scenarios are not equally likely, they all set out possibilities that deserve to be explored. The scenarios look out to the year 2020—far enough ahead to imagine how decisions made today might fully play out.

The first scenario, **The Third Wave**, is a positive extrapolation of the present. It contains potentially dangerous developments, but on the whole it represents the optimistic side of current expectations. The second scenario, **The Dark Side**, extrapolates today's problems and fears into a negative future. It is a more dangerous and alarming future than we usually like to imagine. It is unlikely that the future will contain this much "bad news," but taken individually, most aspects of this scenario seem disturbingly plausible. The third scenario, **Global Mind Change**, challenges traditional assumptions about what a successful future could be like. Cooperative efforts to resolve and suppress conflicts and promote cooperative, sustainable development prove reasonably successful, forcing a fundamental rethinking of the role of military forces and military medicine. The final scenario, **The Transformation**, was intentionally left sketchy at the start of the on-line discussions. Participants were challenged to fill it in with ideas about the "outer edge" of what might be possible by 2020, given a transformation of technology and highly positive social circumstances. It is unlikely that the future will contain so much "good news," but the scenario contains potential developments of enormous importance, and it served to help participants clarify their vision of "the best that could possibly be."

### 3.2 MHSS 2020 Scenarios

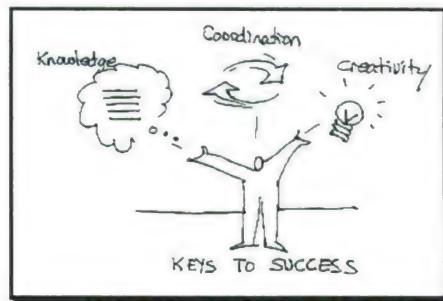
This section details the four MHSS 2020 scenarios: The Third Wave, The Dark Side, Global Mind Change, and The Transformation. Each scenario, written from the perspective of the year 2020, begins with a paragraph that summarizes key developments in military health. This summary is followed by a "big picture" discussion of what is going on in the larger society

beyond the MHSS. Finally, each scenario concludes with a detailed review of the state of military medicine in 2020.

### 3.2.1 The Third Wave



*Military medicine, in 2020, is based on the Third Wave principles of demassification, decentralization, customization, and integration. Warzone medicine operates from mobile platforms using advanced technologies such as auto self-aid systems, personal status monitors, smart assistant terminals, and trauma pods. Health operations other than war have expanded to provide disaster relief and peacekeeping support. The MHSS provides care for active duty members and their family members, with other care shifted to Medicare or privatized. The MHSS provides advanced care and training geared to the "Forecast, Manage, and Prevent Paradigm" and the extensive use of telehealth.*



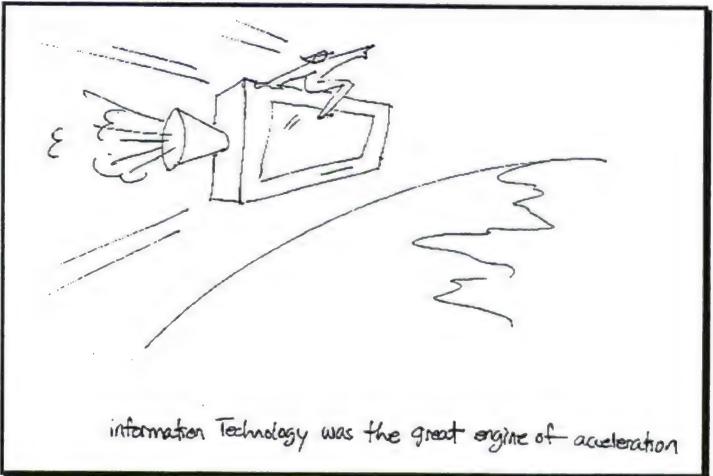
#### 3.2.1.1 The Big Picture

In 1980, Alvin Toffler, in his book The Third Wave, maintained that a historic “change of civilization” was occurring from a Second Wave industrial society to a new kind of Third Wave information society. He argued that the driving force of this change was the emergence of a radically new basis for creating wealth. Toffler’s forecast proved correct. Today, energy and material resources are much less important for creating wealth than they were during the 20th century, and knowledge, coordination, and creativity have become the keys to success.

This change in the nature of wealth creation, combined with dramatic progress in information technology, stimulated growth throughout the world economy. Older industrial societies became the first information societies. But once the new patterns of technology and development were clear, many other nations leapfrogged to Third Wave patterns. The development model pioneered by the “Asian tiger” nations proved influential: vigorous, high-

growth economies supported by an orderly society, robust markets, a small, highly efficient government, and advanced information technology.

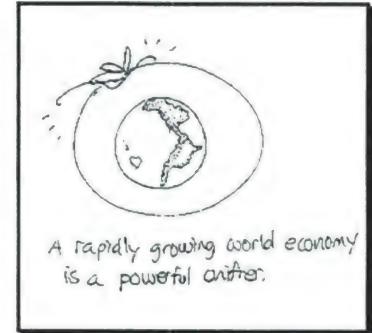
Information technology was the great engine of acceleration. The explosive growth of the Internet in the 1990s, followed by the takeoff of digital television in the early 2000s, created the demand needed to justify investment in broadband communication networks running into and out of every home. The doubling of the processing power of computer chips every 18 months, from the 1970s to 2010, turned personal computers into supercomputers. Massive investments in this new information infrastructure of "networked computing" proved as critical to the success of information economies as the older infrastructure of rails and roads was to industrial economies.



Information Technology was the great engine of acceleration

Education was the other critical success factor in the intensive global competition to create information-based economies. If Americans have full agreement on anything, it is on the importance of lifelong learning to develop the potential of each worker. As President Bonner put it in her State of the Union address in 2008: "Learning is no longer viewed as a segregated activity, conducted for certain hours, in certain places, at a certain time of life. It is the aim of American society." Training has moved from Second Wave patterns of standardized training for all to Third Wave patterns of customized training geared to individual knowledge levels, cognitive strengths, and learning styles. Adult learning became easier and far more effective as research findings related to active learning were systematically applied to teaching. Distance learning, computer simulations, search engines, and many other forms of computer-assisted learning support these new approaches to training.

Around the world, successful economic development has been slowing the rate of population growth. Tensions run high between the rich nations of the Northern hemisphere and some of the poorest, more populous nations of the South, especially in the areas of immigration and trade. But a rapidly growing world economy is a powerful unifier, and North-South tensions are proving manageable in a world where most are getting richer. Increasing immigration from the South to the North led the US and other Third Wave nations to increase foreign aid and modify global trade rules to help promote development and basic living standards for all in the poorest nations. Under UN leadership, a massive global educational effort using communication satellite technology brought the world's literacy rate to above 90% in 2020. These investments in development and literacy had high payoffs in global stability.



At home in the US, the "future shock" of continuous economic restructuring and rapid change creates anxieties. But the cynicism and malaise that plagued American life in the 1990s have retreated. There is a widespread sense of progress, pride in America's economic growth and competitive success, and, for most people, growing personal affluence. Economic inequalities have been partially reduced, although nearly ten percent of the population still lives below the poverty line.

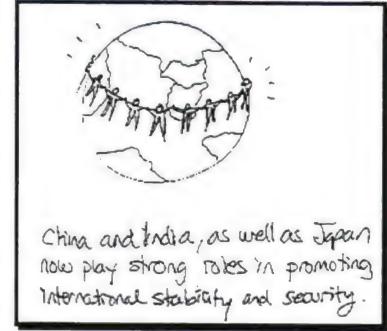
The US and other Third Wave nations have actually reduced environmental impacts, despite continuing economic growth. The most severe environmental problems are in a few badly managed poor nations. Global warming is underway, but it has not yet posed serious problems. Global supplies of oil and food remain ample and moderately priced.

Nation states continue to be the major unit of political organization. The UN has played a continuing role in development, health, and peacekeeping but remains a relatively weak organization. Transnational corporations transfer technologies and management skills better than any other institutions, but they often avoid operating in the highest risk



nations. Non-governmental organizations have long played a critical role in alerting nations and international organizations to problems and potential solutions. Cross cultural interactions and exchanges of every kind continue to increase.

No new “great threats” have emerged to US security. The Cold War is a distant memory. China became more democratic and responsible in its international behavior after the brief but destructive China-India conflict at the turn of the century. China and India, as well as Japan, now play strong roles in promoting international stability and security in Asia.



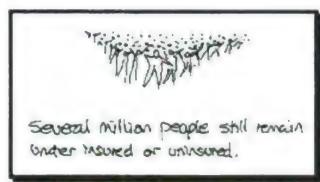
Major regional conflicts have threatened to break out at various times in the Middle East, Korea, and other areas. They continue to be viewed as a possibility because of the slow but persistent proliferation of chemical, nuclear, and biological weapons and ballistic and cruise missiles. The US maintains the military force structure to support one major regional conflict. However, no major conflicts have actually occurred since the brief hostility between China and India at the start of the century. Major conflicts have clearly become unattractive because modern weapons make their costs so high and Third Wave development patterns devalue the traditional ends of war such as territory, natural resources, industry, and workers.

Older ethnic, religious, ideological and border conflicts drag on and flare up in low-intensity regional conflicts. The greatest direct threats to US security today are not from other nations but from increasing factional warfare (ethnic, religious, cultural, gang groupings) and persistent terrorism on US soil and against US worldwide holdings, interests, and citizens.

The US health care system has changed significantly with the rise of the “Forecast, Prevent, and Manage Paradigm” and the spread of telehealth technologies and advanced home care. Health and biomedical advances have cured or controlled major diseases such as cancer, hypertension, and diabetes. Health care delivery systems have become more vertically integrated, and the great majority of prevention and care are delivered today by integrated service delivery networks. Profit restrictions have led to a return to non-profit integrated service delivery network dominance. The finance system has changed little. Physicians remain the

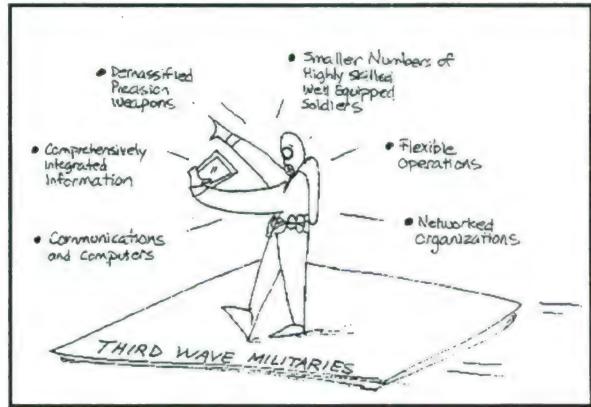
captains of the health team, and all players, including expert software agents, have adapted their roles to make the individual the central focus. There are 50 percent fewer hospital beds in 2020 than there were in 1996 due to the growing emphases on prevention, self-care, telehealth, non-invasive treatment, and outpatient care.

The health care system is not without problems. While coverage has expanded, several million people still remain under insured or uninsured. The aging of the US population is putting a heavy burden on the system. Sophisticated designer recreational drugs are emerging as a major new health problem. New drug-resistant microorganisms are appearing, and medical biotechnologists are racing to develop new treatments. On the whole, however, there has been dramatic progress in health care and the US population has never been healthier than it is today.



### 3.2.1.2 Military Medicine in 2020

Military medicine has marched in step with the transition over the past generation from a Second Wave to a Third Wave military. Second Wave militaries embodied the industrial era's guiding principles of massification, centralization, standardization, and specialization. Second Wave military capabilities were based on mass production, weapons of mass destruction, massive national armies, standardized operations, and bureaucratic organization. Third Wave militaries are organized around a reversal of these principles. Their capabilities are based on communications and computers, comprehensively integrated information, demassified precision weapons, smaller numbers of highly skilled and well equipped soldiers, flexible operations, and networked organizations.



Today's warzone medicine is based on the guiding principles of Third Wave information societies: demassification, decentralization, customization and integration. It operates from

flexible, light, mobile, versatile platforms and uses minimal-footprint just-in-time logistics, so that medical resources can be moved quickly to any location in the world where conflict occurs. It has streamlined echelons of care and medical evacuation. Self-aid technologies including auto-administered antidotes and antibiotics, auto stabilization, and auto homeostasis have decentralized advanced care all the way to the level of the individual soldier. There is a strong focus on maintaining force fitness through selection of high quality people, continuing training, and innovative leadership. Medics are prepared to respond to a wide variety of threats, from bullets and bombs to chemical and biological agents to disease outbreaks. They are able to work together in an integrated service environment with common communications and equipment.

Advanced information technologies are leveraged to serve the entire spectrum of casualty care. The spectrum begins with the equipment carried by individual soldiers, including auto self-aid technologies and Personal Status Monitors that communicate location, injury alerts, and vital signs. It continues with medics equipped with Smart Assistant Terminals with capabilities such as intelligent intravenous drug dispensing, field biomonitoring, expert system diagnosis and advice, electronic medical record access, and telementoring. Injured soldiers can be quickly transported to mobile treatment facilities equipped with a full range of telehealth capabilities. In today's combat environment of pinpoint accuracy weapons and miniaturized cruise missiles, these mobile facilities are much safer than close-in fixed platforms. Soldiers with serious injuries can be put in Trauma Pods with automated life support systems and evacuated within the golden hour in supersonic jetopters to medical support ships or other safe platforms for definitive care.

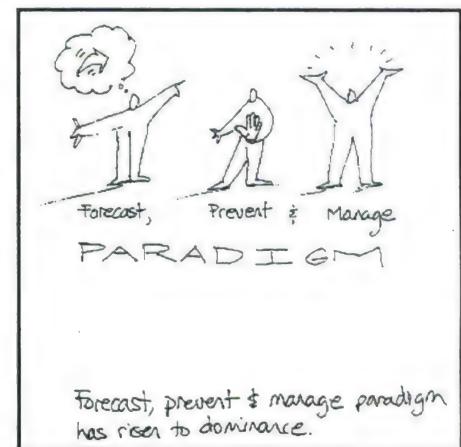
Health operations other than war have expanded for responding to domestic and international emergencies and for supporting peacekeeping operations abroad. There is a health operations other than war team in every operation other than war force under a unified command. The focus of effort is on medical assistance, not on broader concerns for sustainable development and nation building. Expanded health operations other than war readiness training programs reach out to military health professionals, active and reserve, as well as civilian volunteers in disaster relief services. Elite rapid-mobility health operations other

than war teams utilize the same kind of advanced communications and Smart Assistant Terminals available for warzone medicine.

The MHSS provides comprehensive health care for active duty members in the direct care system. Care for family members, retirees, reserves and all other beneficiaries is provided through second generation TRICARE that provides comprehensive services through a network of direct and private sector resources. In health systems for military communities, as in US health care as a whole, a "Forecast, Prevent, and Manage Paradigm" has risen to dominance. It involves forecasting potential health problems based on genetics and disease history, preventing problems through lifestyle change, detecting deviations from normal functioning early with regular biomonitoring, and managing problems that do occur through behavioral change and advanced therapies. Military communities bring strong social pressures to eliminate the tobacco, alcohol, and drug abuse that was so prevalent in previous generations. Overall, the health status of US military personnel is significantly higher today than it was a generation ago.

Telehealth computer and communication technologies have changed almost every aspect of military health, from medical training to personal self-care. One of the most dramatic changes is the use of simulators, which have become as commonplace in medical education as in flight training. Three dimensional virtual reality simulations have proven especially useful in surgical training, providing students with highly realistic training experiences while reducing the number of actual patients with which a medical student needs to interact. Surgeons are able to rehearse difficult operations before performing them, using simulations of individual patients built up from scanning images.

Telehealth has not only revolutionized warzone medicine and hospital care, it has made the home the center of Third Wave health care. Military communities empower their members to take a proactive role in creating good health by making advanced home health systems widely available. These systems deliver personalized "health coaching," including self-care information and expert advice systems; "video house calls" for consultation with health care



Forecast, prevent & manage paradigm has risen to dominance.

professionals; sophisticated management of chronic diseases; support for convalescence from acute care; and supervision and training for home care workers. Support groups for patients with similar health conditions, and consumer information services rating health care providers, doctors, and treatment are provided by both the DoD and civilian systems.



These advanced telehealth services had revolutionary impacts. For example, readings from regular at-home biomonitoring, often using technologies originally developed for military Personal Status Monitors, go into an electronic medical record that includes the individual's unique "genetic fingerprint." Getting immediate feedback on the physiological impacts of behavior (gaining or losing weight, smoking or stopping) is proving to be a powerful motivator for adopting better health behaviors. Departures from normal biochemical ranges are detected quickly, making prevention and early treatment the norm. Since over 50 percent of the variance in our health over our life course is determined by our behavior, the development of effective "health coach" software agents to help us maintain healthy behavior has been one of the truly important advances in medical history.

The development of personal biochemical and genetic profiles has taken us from Second Wave "massified medicine" geared to treating the average population to Third Wave "customized medicine" geared to personal biochemical uniqueness and individual responses to treatment. Information from electronic medical records is aggregated by the Center for Disease Control in a population database that includes demographic data but no individual identification. Systematic evaluation of treatment outcomes on a national scale has dramatically improved medical decision making and helped customize care to population subgroups with shared genetic characteristics.

### 3.2.2 The Dark Side

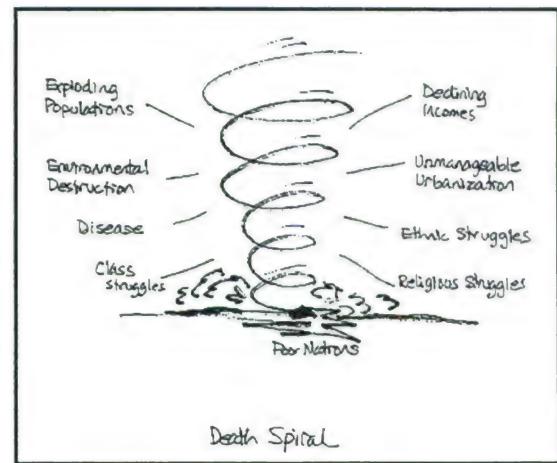
*The MHSS is struggling to provide services for a total military force as large as it was in 1996 but with half of the MHSS personnel and budget of*



those years. *Misinvestments in technological dinosaurs and stagnation in research and development spending limited technology development for military health. Modest advances have occurred in warzone medicine. Health operations other than war grew at the end of the century, but then was largely restricted to the US. The MHSS adapted to budget cuts in many ways including dropping all non-active duty beneficiaries, privatizing many capabilities, and decreasing fixed facilities, but many MHSS operations remain redundant and inefficient. The emphasis of training has shifted to preparing people to function effectively with minimal resources.*

### 3.2.2.1 The Big Picture

The rich nations have gotten richer over the past generation, despite all their problems, thanks to technological progress and global trade rules tilted in their favor. Many poor nations, however, have gone into a “death spiral” of exploding populations, declining incomes, environmental destruction, unmanageable urbanization, disease, and ethnic, religious, and class struggles.



The number of annual births reached its historic peak during the past two decades, with 95 percent of those births occurring in the Third World. Cities in the Third World grew five times faster than metropolitan areas in the affluent nations, so that today metropolitan Bombay, India has nearly 30 million people; Lagos, Nigeria has 27 million; and Jakarta, Indonesia has 22 million. These overcrowded, polluted, nearly unmanageable megacities have become public health disasters and breeding grounds for global pandemics. Environmental problems like soil erosion, deforestation, and aquifer depletion are undermining the ecological foundations of the economies in many poor countries, generating millions of environmental refugees. Disruption of tropical habitats combined with global travel have spread a dozen “New Plagues” around the world. Military “hot zone” teams have contained many others. Other tropical diseases have begun to move into the northern hemisphere—one of the surest indicators of the global warming that is underway.

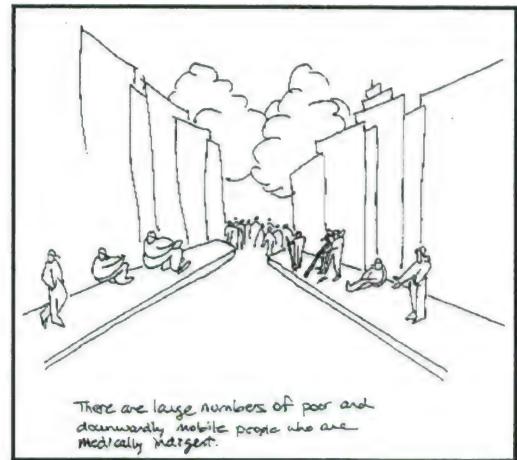
Outright development failures have been occurring with increasing frequency in poor nations in every part of the world. The UN and non governmental organizations have been unable to deal effectively with the scale of global problems, and multinational corporations often make matters worse by playing nations off against each other. The so-called "sinking nations" all have maintained age structures dominated by people in their teens—the "global teenager" phenomenon. Envy and anger smolder among these teens as global TV constantly brings them images of life in the world's affluent nations. Many of them join the mass migration to more affluent nations. Others, without hope for the future, form gangs that terrorize their own communities and rage against the rich of the world.



The US economy continues to grow slowly, but American society has been torn apart from within by worsening economic divisions, immigration pressures, and political, racial, ethnic, and religious conflicts. Failure to control the Federal deficit and to put Social Security and Medicare on a financially sound basis at the end of the 20th century produced today's enormous debt burden, generational conflicts, and bankrupt entitlement programs. Despite these problems, the upper 30% of the population has done well, and many companies have grown huge, expanding through the "decades of consolidation." Yet every time the big companies merged, a large number of workers were displaced. Many of these unlucky refugees from the "megacorps" dropped from the middle class and struggled to find low-paying jobs. Their families found it harder to stay together. Their neighborhoods became more dangerous. Schools failed to educate their children. Racial and ethnic tensions regularly ignited outbursts of violence between competing groups of downwardly mobile people. Each new designer drug spawned a hellish spasm of community pain. The well-to-do live more opulently than ever within their walled and guarded communities.

American politics took a decisive turn with the election of President Hendricks in 2008.

He ran on the four issues that had become the central issues of American politics: halting immigration and closing the US border with Mexico to keep out drugs and the swelling tide of people fleeing from poor nations; isolating the economy from the collapse of the “sinking nations;” destroying the international terrorist operations that increasingly target the US; and getting tough on violence among the angry young poor and downwardly mobile groups.

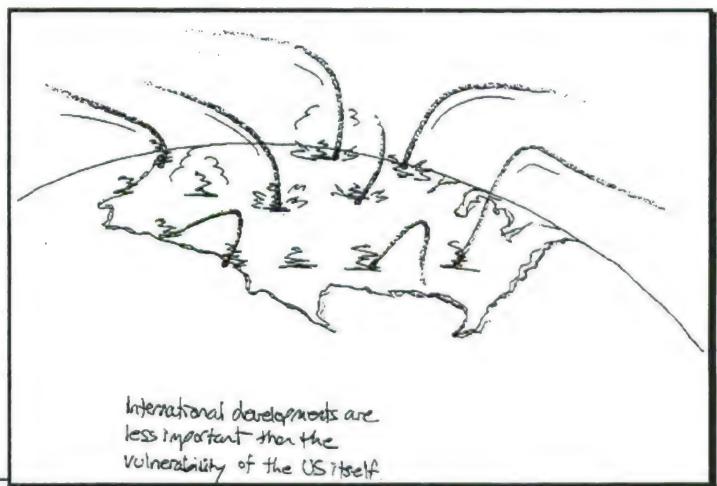


There are large numbers of poor and downwardly mobile people who are medically indigent.

A wide range of new threats to global stability and US security emerged, including a resurgence of communism within parts of the former Soviet Union, and expansionist tendencies in China and India to gain influence over nearby “breadbasket” territories to feed their starving populations. Two areas of regional tension flared into open conflicts resulting in a brief but destructive clash between North and South Korea in the early 2000s and the Mid-East War of 2010 where nuclear weapons were first used in a regional conflict. In this threatening global situation, the US has maintained the military structure to support two major regional conflicts.

Many smaller regional conflicts have broken out, inflamed by ethnic tensions, the struggle for scarce resources, and conflicting fundamentalist movements. Chemical and biological weapons are playing growing roles in these conflicts. It is not yet clear whether the horror of the Mid-East War will restrain the use of the world's proliferating nuclear arsenals or further break down the taboo against their use.

As far as most Americans are concerned, these international developments are less important than the vulnerability of the US itself. Terrorist activities within the US and against US citizens abroad have escalated continuously since the 1990s. Traditional political terrorists were constrained by the



International developments are less important than the vulnerability of the US itself.

need to retain political sympathies. But today's terrorists who believe they are struggling against "Satanic forces," or fighting for their identity as a people, or protecting the Earth, or acting on behalf of the suffering poor against the "rich exploiters," tend to believe their cause is so noble that it justifies almost any action. This has led to increasingly destructive and horrifying violence as terrorists gained access to powerful explosives and mass deliverable chemical and biological weapons. At the same time, many Third World nations have developed small nuclear and chemical-biological arsenals as well as missile delivery systems.

Since the 1990s, a global arms race has also been underway in information warfare. Every military conflict is now also an arena of information warfare. But information terrorism and computer crime are the biggest problems. Terrorists periodically disrupt the operation of international banking networks and global stock exchanges, and sabotage computer controlled electric power and telecommunications networks. Corporations continue to expend enormous resources to develop defenses against electronic sabotage and crime. Those who leave their protected cybersafe compounds or fail to use the best personal protective devices are highly vulnerable.

Americans view the nation's armed forces as their shield against the growing chaos and violence in the world. After going down to 800,000, the number of military personnel is close to mid 1990s levels at approximately 1.5 million. After a period of growing involvement in peacekeeping and health operations other than war in the late 1990s and early 2000s, US forces engaged in these operations were recalled to protect the continental US. The UN gradually lost control of the blue beret soldiers and control reverted back to individual nations and treaty organizations. Within the US, military actions to close and patrol borders to prevent illegal immigration and drug traffic have become a major mission. Elite medical and counter terrorist forces are constantly on standby to respond to mass casualty terrorist actions and to counter information warfare threats. US airspace is heavily protected against aircraft and missiles. Gradually, and against the better judgment of many of its leaders, the armed services have been called upon to play a growing role as a national uniformed police force, taking on tasks such as controlling riots, manning SWAT teams, investigating computer crimes, and managing prisons.

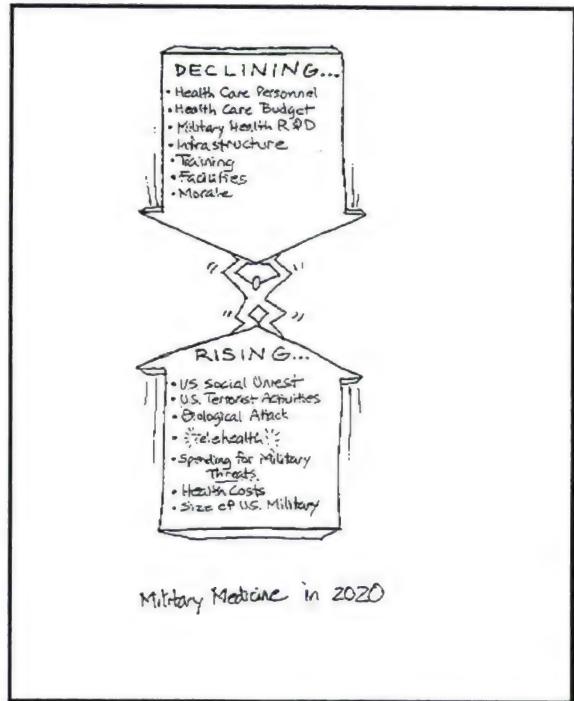
The US population in 2020 is older and sicker. Federal cuts have reduced the funding available for care and costs of health care have increased sharply. The US population, and especially the poor, face growing health threats from high risk behaviors, violence, pollution, "new plagues," and virulent antibiotic-resistant infections. The US health care system has taken on a two-tier character, with full coverage and impressive advances for the 30 percent who "buy up" into large for-profit systems. A frugal rationed form of basic coverage based on medicare and medicaid non-profit integrated service delivery systems has been put in place for most. Destructive terrorists actions, and the spread of new plagues and antibiotic resistant diseases have made even the most affluent people fearful of threats to their health. There are large numbers of poor and downwardly mobile people who are medically indigent. The development of integrated service delivery networks slowed and the overall structure of the health care system remains fragmented. Despite enormous expenditures, the overall health status of the US population is actually lower than it was in the 1990s.

### **3.2.2.2 Military Medicine in 2020**

The Military Health Services System is struggling in 2020 to provide the best services possible in a situation where the total size of US military forces is as large as in 1996, but personnel and budgets for health care have been cut 50 percent from 1996 levels. The challenge is complicated by a set of very difficult circumstances.

Health costs continued to rise, and a greater proportion of military spending went directly to countering increased military threats. As a result, investments declined sharply in military health research and development, infrastructure, and training. Misinvestment at the turn of the century in what proved to be several technological dinosaurs followed by the stagnation in research and development spending after 2004, prevented many potential new military health technologies from being made available. Telehealth expanded, and was one of the success stories in military health, but it never achieved its real potential. Outcome measure development fared poorly.

Only modest advances occurred in technologies for warzone medicine such as effective hemostatic bandages, airway maintenance, fluid replacement, and biological and chemical warfare countermeasures. Many facilities closed or became increasingly obsolete. Cutbacks in training programs reduced morale and retention, and lowered the quality of the force. Capabilities for rapid expansion or adaptation were limited. The whole emphasis in training shifted to preparing people to function effectively with minimal resources. At the same time, the health status of recruits declined.



The MHSS responded to its increased workload and decreased budget by dropping all non-active duty care, privatizing many capabilities, decreasing the number of fixed facilities, increasing its rapid transportation assets, deferring maintenance and sustainment activities, and increasing its reliance on technology (despite slow technological innovation and the decreasing educational level of personnel). Despite these efforts, many MHSS operations remained redundant and inefficient. There was an overall lack of coordination, with little vertical integration of medical assets. The system's focus stayed fixed on primary care, diagnosis, and maintenance of the soldier as an effective fighting machine. A comprehensive approach to prevention was never carried through, although health systems for military communities did implement ongoing educational and disciplinary programs to combat worsening problems of alcoholism and drug abuse.

Health operations other than war grew at the turn of the century, but after US health operations other than war forces in Estonia were killed in a biological attack, health operations other than war were mostly restricted to the US, where they were increasingly needed for responding to terrorist activities and social unrest. However, domestic health operations other than war were hampered by poor support and DoD infighting with the Federal Emergency Management Agency.

In 2007, an upheaval occurred in the MHSS due to the declining quality of care. While enlisted men and women stayed within the direct care system, officers now have the option to receive medical care outside the MHSS. Family members are no longer fully covered. Health care costs continue to climb, and the overall quality of military health care has been declining for over a decade.

### 3.2.3 Global Mind Change



*International conflict has diminished sharply, forcing a fundamental rethinking of the role of military forces and military medicine. Despite these changes, warzone medicine remains essential. Major technological innovations have helped adapt warzone medicine to today's very different patterns of conflict. Research and development in military medicine had important spin-offs, such as the low-cost personal biomonitoring that were made possible by Defense Advanced Research Projects Agency's research on Personal Status Monitors. The greatest MHSS innovation over the past generation was creating the world's preeminent capability for health operations other than war. The MHSS played a critical leadership role in making it possible for DoD to take on health operations other than war as a major role. This role expanded beyond disaster relief and peacekeeping support to include health infrastructure development and other aspects of sustainable development and nation building. All day-to-day health care has been subsumed in a privatized universal health coverage program.*

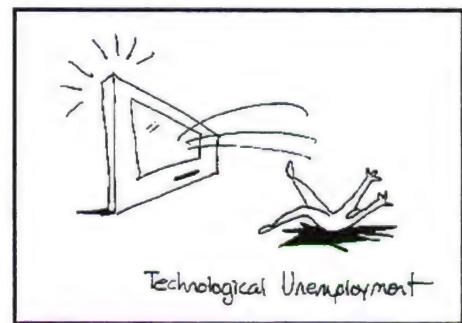
#### 3.2.3.1 The Big Picture

Both crises and highly positive developments jarred leaders and citizens around the world toward “global mind change” in the early 21st century. The Middle East Oil Crisis flared suddenly in 2003 when Saddam Hussein died and only Islamic fundamentalists proved able to restore order in Iraq. Both Iran and Iraq cut off oil sales to the US, while selling oil at bargain prices to China and other developing nations in return for Chinese security guarantees.

The Global Food Crisis followed in 2004. During the 1990s, China switched from being a grain exporter to being a massive grain importer. Imports increased year by year, driven by a growing population, changing food consumption patterns with greater affluence, land loss to urbanization and soil erosion, and conflicts over water use that limited the amount of water available for irrigation. China had no difficulty paying for these grain imports because its economy grew rapidly and it ran a strong trade surplus in manufacturing. Food prices in global grain markets began to rise at the end of the century causing shortages in poor countries around the world. In 2004, prices soared and millions died of starvation. The economic and political impacts dwarfed the effects of OPEC in the 1970s.



While the energy and food crises were sudden, the technological unemployment situation was a "slow motion crisis." Unemployment grew in the developed countries throughout the early 21st century as networked computing, expert systems and automated production made workers more productive or replaced them altogether. Many middle class families slipped backwards. "Jobless growth" became a major political issue as middle class social unrest became more common.

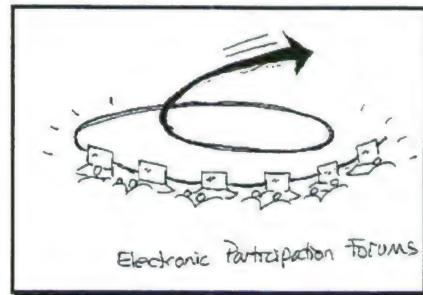


At the same time, a host of positive trends were unfolding. Many innovations emerged from within local communities around themes as varied as community visioning, educational reform, sustainable development, healthy communities, community-based currencies and e-cash, and a New Urbanism concerned with revitalizing neighborhood life through better physical design. A "civic journalism" movement began in the 1990s



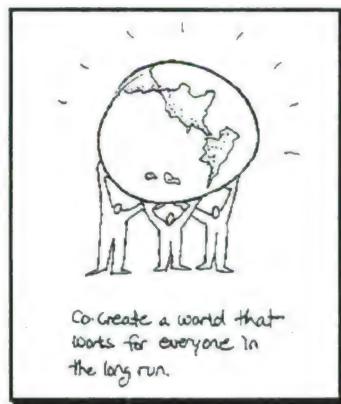
which argued that an important role of the media was to help the communities they serve work better in terms of informed democratic participation. This movement influenced news coverage around the country, helping positive innovations to spread more rapidly.

The information revolution made possible more sophisticated electronic forms of democratic participation, with growing experiments throughout the US and the globe. These electronic participation forums gave local communities powerful new tools for more consciously shaping their own physical and social design. The self-organizing Internet Global Town Meetings that sprang up amid the trauma of the oil and food crises initiated a new level of global citizen cooperation in visioning better futures at the local community level and identifying best practices around the world for widespread implementation. At the same time, new on-line consumer rating services created "smart markets" in which consumers use value screens dealing with price, quality, and many aspects of corporate behavior to "vote with their dollars" for the businesses they prefer.



By 2005, the turmoil and pain brought on by food shortages, energy price rises, and jobless growth had been felt by nearly all of the world's population. Some believe the triggering events for the world to say "enough" were a combination of terrorist disruption of communication systems in several nations, and bloody tribal and ethnic strife worsened by the food shortages. Whatever all the causes may be, there was no doubt that over the past fifteen years the US and much of the rest of the world have gone through an extraordinary period of change. Literally billions of people have consciously reflected on global developments, on how they want to live, and on what they want their governments to do.

The resulting changes have been so dramatic that historians have begun to call this period the era of "global mind change." At the heart of this mind change has been growing agreement that the central challenge facing all nations and institutions is to co-create a world that works for everyone for the long run.



Nations increasingly have agreed not to disagree violently. Beliefs about the importance of tolerance and the value of diversity have been strengthened everywhere. New patterns of sustainable development that emphasize qualitative improvement (better, healthier, more satisfying) over quantitative growth (more, bigger) have been widely accepted. The ideal is to achieve patterns of development that simultaneously create economic opportunity, protect the environment, promote fairness, and improve social well-being. All the industrial nations are seeking to achieve "Factor 10" economies by 2050—information-based economies with highly efficient technologies that can generate a unit of GNP with 1/10th of the energy and materials needed in the year 2000. There has also been a large-scale shift toward more productive and sustainable food systems involving greater regional self-reliance, soil conservation, water-efficiency, ecological biotechnology, and healthier low-fat, lower-protein diets.

The US and several European nations have responded to the challenge of technological unemployment by designing a redistribution system that assures a minimum income for all. The Europeans call it a "citizens income." In the US it takes the form of the "negative income tax" first proposed during the Nixon administration decades ago. This has generated a growing pool of volunteers whose identity and sense of meaning are less tied to paid work and more connected to serving their communities.

The role of the nation state has changed more significantly than people envisioned a generation ago. An interconnected world economy with global media, global institutions, transnational corporations, and regional economic groupings shifted some decision making "upward" away from national governments. At the same time, much decision making has devolved from nation states to regions, states and provinces, and cities.

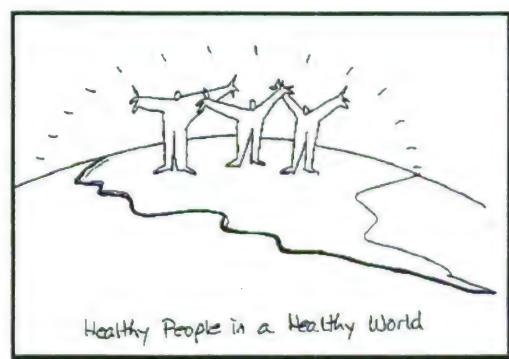
This weakening of nationalism, combined with decreased conflict, has dramatically altered the role of armed forces around the world. Many conventional weapons and weapons of mass destruction were destroyed. The national interest, both at home and abroad, is increasingly aligned with preventing and suppressing violence and conflicts rather than waging wars, providing humanitarian aid for disaster recovery, containing outbreaks of new and old diseases, and giving poor nations assistance in sustainable development and nation-building. Helping developing nations create systems for stable, long-term economic, social and

environmental health is proving to be the key to enhancing civil security world wide. The military operational spectrum is shifting toward controlling more than massing forces, constructive more than destructive operations, and involvement in civil as well as military venues.

Global military spending in 2020 is only two times as high as spending for economic development, compared to fourteen times as high in 1996. In the US, much of the DoD's funds have been reprogrammed into multilateral security actives, often through members of the UN family and entrepreneurial partnerships with non-governmental organizations.

Health care in the US has improved substantially. It focuses on lifetime health and emphasizes health promotion, prevention, self-managed care, creating healthy communities, and implementing the "Forecast, Prevent, and Manage" paradigm of care. The role of health care professionals has changed dramatically. Far fewer are needed because advanced home health information systems are used by most individuals and families for prevention and self-care. Many alternative therapies have been integrated into standard medical practice, and extensive competition has developed between physicians, nurses and alternative providers. There are integrated service delivery networks, both real and virtual, which provide seamless health promotion and care. The extensive development of outcome measures and provider rating systems has meant that for-profit and not-for-profit providers compete on how well they provide cost effective health gains.

The main objective of both US health care and global security policy is creating "healthy people in a healthy world." This is a lofty vision that is still far from being achieved. Despite the cooperation and progress that has been achieved, many people in the world's poorer countries still suffer from poverty and ill-health. But there is no doubt that progress toward this vision is being made.



### 3.2.3.2 Military Medicine in 2020

The Military Health Services System changed dramatically during the first two decades of the 21st century. The historic shifts that occurred in both the role of the military (from defense to security) and in medicine (from treatment to prevention, wellness and treatment) created pressures for change in the MHSS, and the leadership developed a vision of the future which provided the necessary strategic direction.

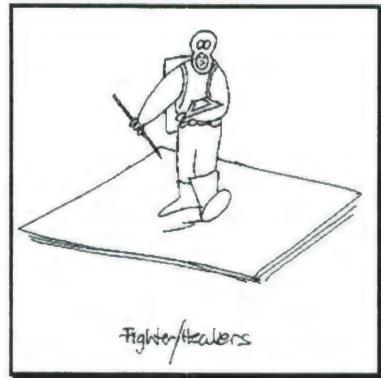


Warzone medicine remains essential in 2020, even though international conflict has diminished sharply. The MHSS maintains high levels of readiness adapted to today's very different patterns of conflict. Both the low-intensity regional conflicts and terrorist threats that still occur demand rapid deployment to widely dispersed locations. Improved non-lethal "group control" weapons are often used to limit these hostilities. They include tear gas, low-frequency sound, and other crowd control tools; calmative agents such as drug gases and sound; mace, rubber bullets, and other self-defense devices; and anti-weapons like fuel contaminators, anti-traction Teflon, superglue, and computer viruses that block the use of weapons.

When necessary, however, small squads of troops with highly accurate and lethal weapons, using information systems that provide comprehensive battlefield awareness, can deliver the military punch of a 1990's division of 15,000. Small, widely dispersed squads can scout out enemy targets and enter their locations into an information system shared by all land, sea, and air forces in the theater.

Major technological advances have adapted warzone medicine to this new pattern of conflict. Backpacker/Buddy medical kits and auto self-aid systems give small groups of troops unprecedented capabilities for self-care. All combatants are now "fighter/healers" trained in the use of these tools. All combatants also carry Personal Status Monitors which regularly

communicate their location, injury alerts, and vital signs. These monitors help commanders assess the condition of troops, and facilitate rapid evacuation to remote medical facilities and immediate, appropriate treatment. Advanced technologies ranging from Smart Assistant Terminals for field medics to Trauma Pods with auto life support for medical evacuation have revolutionized casualty care.



Changes in the focus of military health research and development had important spin-offs for US health care. The Defense Advanced Research Projects Agency's work on Personal Status Monitors led to today's widespread use of low-cost personal biomonitoring, and other MHSS projects led to new vaccines and a wide variety of self-care products.

The greatest MHSS innovation over the past generation was the creation of the world's preeminent capability for health operations other than war. US forces had been called into a growing number of health operations during the 1990s. But it was the heroic military response to mass casualties in the 1999 Oregon-Washington volcano eruptions, followed by responses over the next several years to repeated acts of terrorism against buildings, and communication and electric power networks, that elevated health operations other than war to a central, ongoing military mission.

As the MHSS moved further in this direction, they partnered with the State Department, the World Health Organization, health-oriented non-governmental organizations such as Doctors Without Borders, and development-focused non-governmental organizations to leverage resources against the causes of disease. Working together, this complex of organizations engaged in different types of International Rescue Missions to prevent breakdowns in nations with the most severe health and development problems. Participation in International Rescue Missions has arguably proven the most effective investment in global stability and US security since the end of the Cold War.

Early health operations other than war activities centered on responses to natural disasters and terrorist strikes and support for peacekeeping in regional conflicts. Over time,

these activities became more preventive in character as health became a central focus for making communities more secure, stable and sustainable. Just as the US health care system shifted its role toward “designing out” the causes of ill health, military medicine has increasingly taken on the role of working with others to design out causes of insecurity and to enhance community and environmental health in the US and around the world.

The MHSS played a critical leadership role in making it possible for the DoD to take on health operations other than war as a primary role and train military personnel to effectively carry out that role. One of the MHSS’s major innovations involved training their personnel in poor urban and rural sections of the US where they could encounter situations similar to what they would encounter in poorer countries. This strategy provided both realistic training and valuable assistance to US communities.

The active duty force and MHSS budget and manpower are all roughly a third of their 1996 level. Day to day health care for active duty members, family members, and retirees has been subsumed into the privatized universal health coverage system that was put into place in 2002. Yet, the MHSS has maintained its focus on developing benchmark health care provider systems by guiding government research and development to support telehealth and other innovations for domestic health care. Military medicine has played a leading role in the evolution of the US health care system toward an emphasis on health promotion, prevention, and the use of information systems for advanced home care.

### 3.2.4 The Transformation

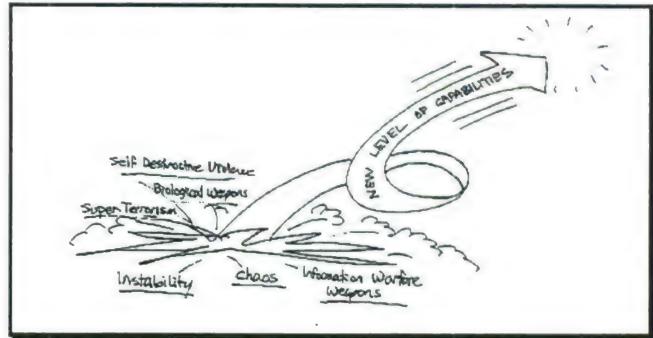


*Both military medicine and US health care have been reshaped by a transformation of technology. “Health coach” software agents with high level artificial intelligence learn from experience how to shape healthier behavior in the people who use them. Ultra-miniature nanotechnology “cell herding machines” heal wounds rapidly, while “immune machines” that move in the blood stream can be programmed against any diseases identified in world medicine. Even as the need for warzone medicine is decreasing sharply, it is being revolutionized by advanced technology. Health operations other than war have become the central focus of military medicine. The MHSS maintains its*

*national operations, but is also the lead participant in the Global Military Health Services System within the UN structure. Because the MHSS offers access to leading edge health technologies, it continues to provide health care for all military personnel—active, reserve, and retired.*

### 3.2.4.1 The Big Picture

The beginning of the 21st century was a time of extremes, good and bad. The ruinous China-India War, proliferating terrorism, and the appearance of “super-terrorism” with weapons of mass destruction traumatized US and world leaders. These events dramatically demonstrated the potential for instability and chaos with the spread of chemical, biological, nuclear, and information warfare weapons. The world seemed to be going mad, with all civilized restraints abandoned.

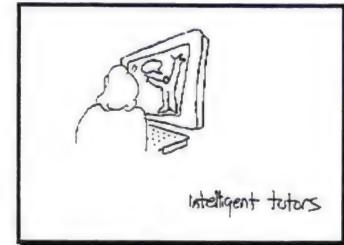


At the same time, however, momentous advances occurred in artificial intelligence, molecular nanotechnology, biotechnology, consciousness technologies, fusion, high-temperature superconductivity and other areas. Even as the trauma of war and terrorism peaked, the realization was dawning that human society was moving to an entirely new level of capabilities. A future of universal plenitude was nearly inevitable—as long as self-destructive violence could be avoided.

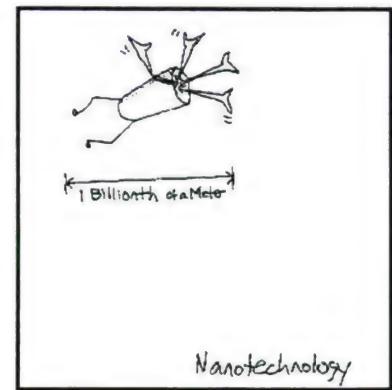
While the scale and speed of these technological changes were surprising at the time, in retrospect they are well understood. Progress accelerated in nearly every area of science as information technology promoted efficiencies in the organization and sharing of scientific research on a global scale. A synergy occurred between technological progress in many different areas that in turn accelerated progress in each of these areas. This has happened before in history, as when fossil fuels, steam engines, machine tools, and other technologies proved mutually amplifying and produced the Industrial Revolution. The Transformation at the start of the century synergized significant advanced developments in computers and

telecommunications, artificial intelligence, biotechnology, nanotechnology, materials, energy, and the cognitive sciences and brain research. The result has been compared to ten Industrial Revolutions rolled into one and occurring within a single generation.

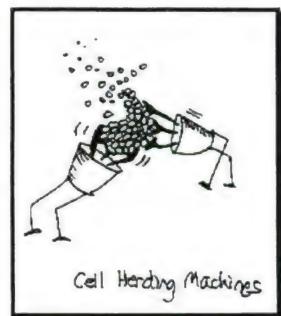
The breakthroughs that occurred in artificial intelligence illustrate how the transformation of technology reshaped every area of life. Artificial Intelligence breakthroughs led quickly to intelligent tutors that revolutionized education, auto-guided vehicles that revolutionized transportation, instantaneous language translation which made it possible for people everywhere to communicate with each other, and thousands of other applications. This explosive technological progress translated into surging economic growth and spreading health and well-being.



Molecular nanotechnology is probably the most dramatic example of this progress. Nanotechnology is ultra-tiny technology on the scale of nanometers or billionths of a meter. The initial breakthrough occurred in 2006 when techniques developed in protein engineering first made it possible to create an "assembler," a molecular-scale device with a robotic arm under computer control able to assemble objects "from the bottom up," atom by atom and molecule by molecule. Once the first assemblers were created, they were put to work building more assemblers. Self-replicating assemblers soon became inexpensive, and large teams of assemblers were used to build other nanodevices as well as ordinary objects. Nanomanufacturing is rapidly ushering in a new era of totally customized, low cost, perfect quality products manufactured with zero waste and pollution.

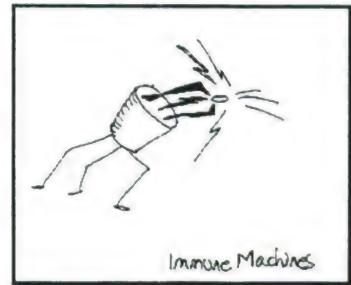


Nanomedicine was one of the more difficult applications of nanotechnology, and its full potential has only become clear in the past five years. Already, however, three tools of nanomedicine are transforming every area of care. The first, *cell herding machines*, stimulates and supplements the body's own tissue construction and



repair mechanisms. No invention in the history of military medicine compares to the capability of cell herding machines to promote the rapid healing of wounds. In health care more generally, cell herding machines have already been developed to clean out and reinforce the structure of blood vessels, repair joints, strengthen bones, remove scar tissue, and even fill cavities with natural dentine and enamel.

The second device, *immune machines*, supplements the natural immune system. Though smaller than blood cells, immune machines have computer power comparable to 1990s mainframes, huge data bases, instrumentation for identifying biological surfaces, and devices for destroying the undesired viruses, bacteria, or other foreign material they encounter. Unlike natural immune systems, which have to be exposed to invaders to develop defenses against them, immune machines can be programmed to protect against any viruses or diseases that have been identified in world medicine. This makes them the ultimate warzone medical defensive system against both natural diseases and biological warfare.



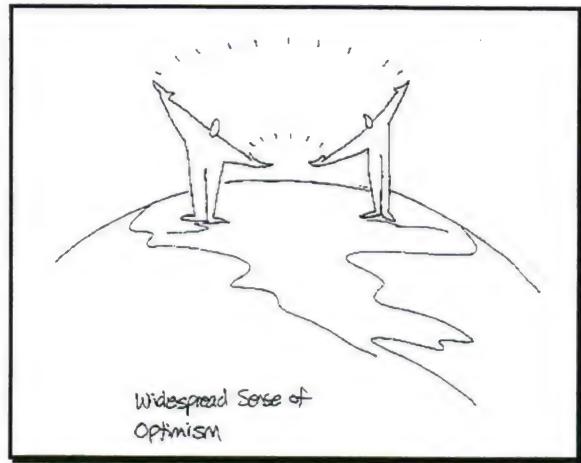
The third type of nanodevice, *cell repair machines*, is just beginning to be tested. Much smaller than cells, cell repair machines will be able to work as "nanosurgeons" to repair the interior of cells. When cell repair machines are available, we will be able to repair cellular damage caused by viruses, chemicals, or radiation. Genetic surgery will become a simple procedure of swallowing a pill. Ultimately, we may be able to repair and counter many of the effects of aging.



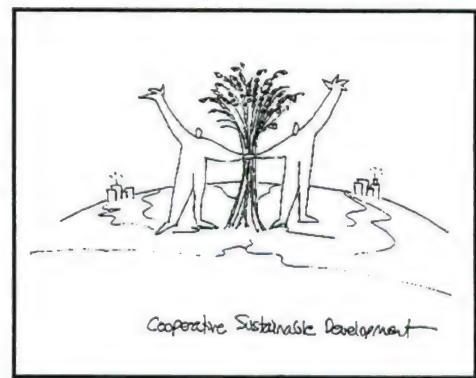
Other breakthroughs, especially in low-temperature fusion and high temperature superconductivity, were nearly as dramatic as the emergence of nanotechnology. But the most unexpected new area of technological development over the past 15 years has been "consciousness technologies." They are based on knowledge developed in the most diverse areas, from the cognitive sciences and brain research to the "perennial wisdom" of the world's religious traditions. They are being used to control blood pressure, block pain, speed learning,

boost immune system functioning, relieve depression, improve attention and memory, overcome phobias and fears, and, most recently, to unlock barriers to extrasensory capabilities.

The social changes of the past two decades have been as surprising as the technological changes. Rapid progress on so many fronts created a widespread sense of optimism that deflated anger and conflict around the world. Leaders acted with determination to suppress the violence and chaos that might undermine progress and to encourage the tolerance and mutual understanding needed to participate fully in the global economy.



Faster than anyone believed possible a generation ago, the sense of living in a global community has become a vivid reality. Cooperative Global Sustainable Development is the central theme of international relations. Nations have been visibly losing prominence, and the expectation is growing that they will become much less important before the end of the 21st century. While a sense of national identity still adds to the variety and richness of life, many people identify just as much or more with their local communities, ethnic backgrounds, professions, on-line virtual communities, and their sense of being part of a single human family.

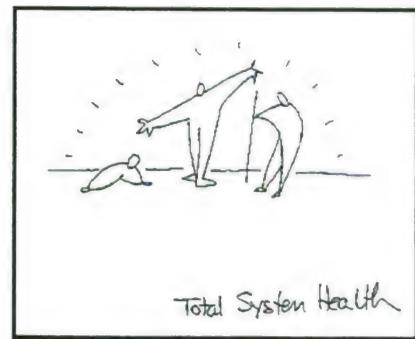


As nations everywhere raced to join in the transformation of technology, global cooperation accelerated to quell violence. Militaries downsized quickly as threats declined and nations poured resources into new generations of civilian technology. Some US forces were absorbed fully into new global forces directed out of the UN structure. Others retained national control but typically engaged in joint force operations against terrorists and other non-state

actors. The MHSS maintained its national operations, but it has also become the lead participant in the Global Military Health Services System.

Global institution-building has proceeded rapidly, but not in the way many people once expected. The UN and the World Court have become the central institutions for global conflict resolution, global forces under UN command play a major role in peacekeeping, and new international institutions have grown. Yet nothing like a "world government" has developed. Instead, complex relationships have evolved between international institutions, national governments and their militaries, local communities and regions, non-governmental organizations of many kinds, multinational corporations, and the globally operating small businesses that scurry everywhere in today's net-based world economy. The result is a working system of "world governance," without the hierarchical character of "world government."

Health is not just a high priority today, "total system health" is becoming the organizing framework for global development. Remaining threats of illegitimate violence are viewed as psychosocial illnesses that need to be cured. Threats to the environment are perceived as community health threats impacting everyone and worthy of urgent response. Most "warfare" today is directed against the "enemies" of disease and ignorance with "arsenals" containing immunogenic drugs, water purification systems, and intelligent tutors.

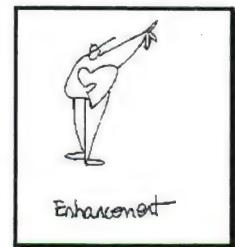


US health care is provided through a national system of integrated service delivery networks whose design and services are based on local community input. These networks have found that it is cost-effective to focus on community health as well as individual health. Financial responsibility for the system remains split between employer, government, and self pay, but nearly everyone is covered by a quality system. Personal responsibility for healthy lifestyles and self-care is the norm, and is supported by very advanced home health information services.

Artificial intelligence breakthroughs have taken home services to high levels of sophistication. For example, a "health coach" software agent can learn from its successes and failures in influencing behavior and improve over time. It can communicate using speech, text, and multimedia. It can gear its presentations to match the knowledge level and learning styles of adult family members, and then completely change its behavior to interact with a five year old child.

There are fewer health professionals today, and many of them now support home care using telehealth technologies. There is much more collaboration and integration across specialties, including "alternative therapies." The systematic evaluation of health outcomes showed that some of the approaches used in different areas of alternative medicine are highly effective, and they have been incorporated into standard practice.

Now the leading edge of medical practice is "enhancement." Enhancement can involve anything from cardiac efficiency and immune response to mental alertness and biochip linkage of human minds and computers. Enhancement also involves finding a way of life that develops qualities of love, care, appreciation, tolerance, compassion, and joy—qualities that bring measurable physiological benefits as well mental health. No one knows today how far enhancement can go or what it will mean for the future of the human race, but it is clearly the frontier of health.



The extraordinary advances of the past generation also bring potential dangers that are becoming an increasing focus of attention. Conflicts among fringe groups still occur, and ecological disasters caused by earlier generations of technology still call for deployments of military medical teams along with scientists and skilled volunteers. Artificial intelligence is already being used in "brilliant weapons." Nanotechnology has recently been used to create so-called "Gray Goo" that disassembles the molecular structure of any metals it touches. Consciousness technologies could be developed and misused for "mind control." As a result, there is no sense today of having arrived at any kind of utopian state. We have made a tremendous leap of progress, but as always, the future will be better or worse depending on our vigilance, good will, wisdom, and effort.

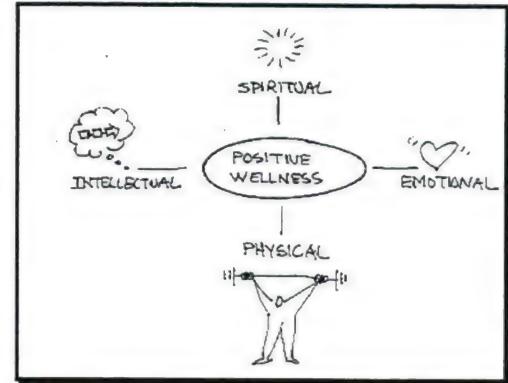
### 3.2.4.2 Military Medicine in 2020

Surgeon General Alvarez recently expressed a common view when he said “It’s ironic that the same technologies that are making war obsolete have also triggered an era of unparalleled progress in warzone medicine.” Artificial Intelligence technology led to innovations like the Hospital-on-the-Wrist and auto-guided trauma transport. Molecular nanotechnology was applied in rapid healing, tissue rebuilding, and defense against disease and chemical-biological agents. Stem cell and cloning techniques from biotechnology made it possible to create replacement organs. Breakthroughs in consciousness technology are being applied in many areas, from enhanced functioning in warzone conditions to pain control and temporary elimination of the need for sleep.

Health operations other than war have become the major focus of military medicine. US forces play a major role in the UN health operations other than war force, which has earned great respect around the world. The need for International Rescue Missions to help nations cope with health and development crises has almost disappeared, and the emphasis in global health operations is shifting toward assistance in sustainable development (especially health infrastructure development) and community disease prevention and health promotion. The US health operations other than war system provides extensive training in disaster relief and “healthy community” development for both military and civilian health professionals. The health operations other than war section of the MHSS operates the military’s Medical Technology Transfer Center, where results from military health research and development are systematically applied to civilian medicine.

The MHSS continues to provide health care for all military personnel—active, reserve and retired. As the MHSS became a developer and early adopter of so many leading edge health technologies, the popularity of the MHSS precluded plans for privatization. Military communities have fewer medical personnel in uniform due to military downsizing, reduced illness, extensive self-care, and the ability to provide care over distance with telehealth technologies.

Advanced home health information services, combined with biomedical progress, have eliminated most diseases and moved a long way toward systematic disease prevention. The frontier today in 2020 for health systems in military communities is positive wellness—enhanced functioning through physical development and intellectual, emotional and spiritual growth. Many military health professionals focus on lifestyle counseling and health monitoring to aid in extending the lives of service members. It is widely estimated that the average lifespan of MHSS beneficiaries born in 2020 will be near 120. Military medical training has been revolutionized by consciousness technologies used to speed learning, artificial intelligent tutors, and holographic virtual reality simulation for team use.



## SECTION 4.0 ABSTRACTS

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The following matrices summarize the major points that arose in the ten working group elements that discussed alternative scenarios of military health in 2020. These abstracts provide a thumbnail sketch of the major points presented in Section 5, "The Conversation." In Section 4.1, the abstracts are organized by topic. In Section 4.2, the abstracts are organized by key force.

### 4.1 Topic Abstracts

The matrices in this Section contain the ideas that emerged within each work group element. They have been organized by topic and by scenario. The information in this section was reconciled and integrated by the project's writing integration team to produce the narrative scenarios provided in Section 3. The work group elements include:

- Future of the Global Community
- Combat
- US Health Systems
- Warzone Medicine
- Health Operations Other Than War
- Health Systems for Military Communities
- Military Health Personnel/Leadership Group
- Military Health Technology
- Military Health Platforms/Infrastructure
- Military Health Funding Patterns.

### 4.1.1 Future of the Global Community

- ◆ Impacts of Major Global Shifts
- ◆ Successful Patterns

The Third Wave	The Dark Side	Global Mind Change	The Transformation
<b>Impacts of Major Global Shifts</b>			
Cold War is a distant memory. US is Western regional Third Wave leader, China and Japan are the Asian regional Third Wave leaders. Increasing flows of poor immigrants to developed nations spurs richer countries to promote development and basic living standards for all in poor nations.	Expansionist activities by China and Russia threaten global stability. Rapid populationulation growth, ecological problems like soil erosion and water shortages, disease outbreaks in overcrowded Megacities and other problems undermine growth in many poor nations. Desperation, anger and envy smolder as global TV brings awareness of discrepancy between rich and poor. Mass migrations from poor toward rich nations trigger neo-Nazi revivals in Europe and most challenging times in US since Civil War.	Cooperative sustainable development efforts and International Rescue Missions (IRMs) to aid nations threatened by development failures reduce populationulation growth and tensions between rich and poor nations. US is strengthened as nations of Western Pacific relieve US of financial burden of providing world security. China and Japan both play strong roles promoting international security.	The “global community” becomes a reality as people everywhere seek to “make the world work for everyone.” Policy makers in their respective countries offer financial incentives to encourage bridge-building and shared understanding between different nations and cultural groups. Leaders use “common goal” rather than “common enemy” strategies to encourage cooperative effort.
<b>Successful Patterns</b>			
Development model pioneered by Asian tigers proves influential: vigorous, high-growth economies supported by an orderly society, market arrangements, a small, highly efficient government, and advanced technology. Some poor countries leapfrog to Third Wave economies by developing advanced information infrastructures. Development: Massive educational efforts bring	Not economically successful for poor nations or socially successful for anyone. Internal stresses and the strain of ethnic, religious and class struggles threaten to tear nations apart from within. UN is unable to cope with large-scale problems of refugees, regional conflicts and economic failures. Becomes increasingly irrelevant. NGOs prove unable to	US and other affluent nations pioneer new patterns of sustainable development which create economic opportunity, a healthier environment, and social fairness. Multidimensional strategies reduce populationulation growth, and progress in agricultural technology enables developing nations to increase food supply faster than populationulation. International agreements are made on migration and	Synergy between technological progress in many areas produces dramatic economic growth, restructuring economies everywhere. Militaries evolve more towards service organizations promoting health and sustainable development around the world. The best of the warrior ethic, combined with the best of the medic and peacemaker ethics, creates a shared moral framework for rapid cooperative global

The Third Wave	The Dark Side	Global Mind Change	The Transformation
<p>world's literacy rate to greater than 90% by 2020.</p> <p>Nation States: Countries continue to be the major political organizational unit.</p> <p>UN plays a slowly growing role in development and peacekeeping. By 2020, it includes non-national entities such as multinational companies and non-governmental organizations.</p> <p>Non-Governmental Organizations (NGOs) NGOs help alert nations to problems and potential solutions.</p> <p>Multinational Corporations (MNCs) transfer technologies and management skills better than other institutions. But they often avoid operating in high-risk nations.</p> <p>Cultural Cross-cultural exchanges increase. Diversity of local cultures coexists with emerging global patterns of tastes in consumer preferences, the arts, and other areas.</p> <p>Leading Science &amp; Technology - Computers, Artificial Intelligence (AI), Materials Sciences</p>	<p>deal effectively with the scale of national and global problems.</p> <p>MNCs often play off one nation against others. They exploit poor nations, paying off local leaders. Declining responsibility for the environment and overall welfare of society.</p> <p>Cross-cultural exchanges break down. The government's inability to provide a safety net for poorer groups spawns social unrest and inflames racial tensions.</p> <p>Computers, AI, and Weapons are examples of important sciences and technology.</p>	<p>immigration. International Rescue Missions prevent breakdowns in nations with most severe development problems.</p> <p>Nation States: Prominence of nations slowly diminishes as decisions devolve to local communities and states/provinces, while cooperation increases at regional and global levels.</p> <p>UN proves crucial for family planning, conflict resolution and peacekeeping, development of poor nations and setting rules of global trade. Some parts of UN grow stronger grow more important - especially international issue resolution.</p> <p>NGOs working in cooperation with nations and the UN take on the important role of International Rescue Missions to maintain health, order and economic progress in the international system.</p> <p>MNCs grow in social responsibility and work as partners with nations for mutual advancement.</p> <p>Cross-cultural exchanges increase dramatically. Cultural diversity is valued and intentionally preserved, but there is growing cross-cultural agreement around key values such as the illegitimacy of violence between nations, an ecological ethic, and the importance of tolerance.</p> <p>Complexity and Systems</p>	<p>development.</p> <p>Nation states quickly and visibly lose prominence, and the expectation grows that they will become much less important, or even disappear, before the end of the 21<sup>st</sup> century. Many people feel their community, cultural and virtual community identities are stronger than their sense of national identity. The sense of living in a "global community" is a vivid reality for many.</p> <p>UN and the World Court become the central institutions for global conflict resolution. Many parts of the UN become much stronger, but it does not become a "world government."</p> <p>NGOs work closely with communities, corporations, nations and the UN to foster rapid sustainable development.</p> <p>MNCs work as partners with communities, other NGOs and nations for mutual advancement.</p> <p>Distinct cultural groups exist while understanding the uniqueness of other groups. High uniqueness and diversity combined with ability to work together effectively toward common goals.</p> <p>Computers and telecommunications, AI, Nanotechnology, biotechnology, material sciences, energy, cognitive sciences and brain research are examples of leading sciences and</p>

The Third Wave	The Dark Side	Global Mind Change	The Transformation
		Theory, Ecology, Biotechnology, Computers, and Energy/Physics are areas of leading technology and science areas.	

## 4.1.2 Combat

- ◆ Spacial Dimensions of Combat
- ◆ Weapons
- ◆ Control of Military Forces
- ◆ Combatants

The Third Wave	The Dark Side	Global Mind Change	The Transformation
<b>Spacial Dimensions of Combat</b>			
Limited regional conflicts continue to flare. US military continues to be tasked for peacekeeping missions worldwide. Growing terrorism on US soil and against US interests, citizens and worldwide holdings. Spotty events of information warfare. Manned multinational space stations deployed, including defense capabilities against terrorism and information warfare.	Military up-sized. Advanced weapon systems developed to counter threats from the FSU and China. Remaining forces abroad involved in peacekeeping and HOOTW recalled to protect CONUS. US borders closed and patrolled by military to prevent illegal immigration and drug traffic. Elite forces constantly on standby to counter terrorist actions and information warfare. US airspace heavily protected against aircraft and missiles. Forces also used in traditional police roles, e.g. SWAT teams, investigating computer crimes, managing prisons.	Reduction of terrorism and information warfare threat after 2010 allow forces to decline further in number. Small active military utilized largely for HOOTW, conflict resolution, nation and community building. Most military are in a reserve status and used to promote peace through medical support missions. Medical personnel are assigned to medical NGOs to facilitate emergency response logistics and health delivery worldwide.	Military is largely transformed to a comprehensive national and international service organization. Military medical personnel are instrumental in helping create healthy communities around the world. By 2020, need for traditional HOOTW is decreasing and the emphasis in global health operations is shifting toward high level wellness and self-actualization.
<b>Weapons</b>			
Conventional weapons are still important. Major developments occur in information warfare, e.g., defenses against computer viruses. New advanced weapons include directed energy beams, pinpoint accuracy weapons, miniaturized cruise missiles. Improved "group control" weapons, e.g., immobilizing chemical agents, stun guns, micronets, sticky gunk,	An unrestrained global arms race takes place in information warfare. Corporate cyberwar and antiwar systems developed. Terrorists seek to disrupt computer-based control systems of governments, monetary systems and stock exchanges, and control points for energy, food, water and media systems. Those who leave protected cybersafe compounds or	Improved non-lethal "group control" weapons help limit small regional conflicts. Directed energy weapons are perfected. Rapid progress has been made in anti-information war systems including encryption advances. Large numbers of wound inflicting weapons and weapons of mass destruction are destroyed. Designer vaccines and immunogenics used to	Disease, poverty and natural disasters increasingly become the "enemies"; military structures evolve into response, research, planning and logistic capabilities; and the new technologies developed for these tasks are the major "weapons." Advanced technologies developed for new military missions include ecological/biosystems engineering

The Third Wave	The Dark Side	Global Mind Change	The Transformation
and stun noises. Psychological warfare advances. Spread of knowledge for creating nuclear, chemical, and biological weapons. Proliferation is limited through ethics, widely shared fears, and control regimes.	fail to use the best personal protective devices are highly vulnerable. Terrorists and small nations gain access to more advanced weapons, e.g., small neutron bombs, small directed energy weapons, high-tech neuro and biotoxins.	combat natural and terrorist caused outbreaks, reducing one of the greatest terrorist-related fears. Other primary "weapons" are those of health agents, e.g. immunizations, rapidly acting immunogenic drugs, water purification systems, food preservation systems, advanced prevention systems like reverse insect pheromones (highly effective in repelling vectors), and miniaturized communication and learning centers.	and consciousness technologies. Biotechnology creates second generation vaccines, replacement cells and organs, advanced immunogenics, and a wide variety of "life enhancers" that improve mental and physical functioning. By 2020, most wound inflicting and destructive military weapons have been destroyed or relegated to museums. Cyber "fail safe" systems neutralize information warfare threats.
<b>Control of Military Forces</b>			
Nations continue to exercise primary control of their own military forces, but there is a slow evolution of rotating, multi-nation military leadership teams. These teams involve NATO, Russia, China, the Arab League and the UN in response to limited regional conflicts. Major difficulties arise in resolution of control, with occasional unilateral interventions. By 2020, however, most military action is led by a standing international military leadership structure.	UN slowly loses all control of blue beret soldiers and control reverts back to nations and smaller conclaves of nations. Cooperation between militaries is further discouraged by terrorist penetration of control systems. Nation states become armed encampments with physical and electronic walls, and control is concentrated at the national level. Military alliances of rich nations strengthen to quell attacks by poor and terrorists and to contain former Soviet Union and Chinese expansionism. A UN structure exists but only functions as an intermediary to resolve crises between forces.	Nation state teaming in the face of international crises related to food, oil and religious fundamentalism create cooperative leadership cells among treaty organizations and even within segments of the UN. This leads to the creation of international military cooperatives that team to abate terrorism and information warfare. Teams form and dissolve as needs present themselves. The UN organizes "International Rescue Missions" under control of consensus leadership to prevent development failures and prevent and abate conflict. By 2020 an International UN Leadership Corps is established and charged to manage many conflicts. Some nations continue to have military forces, but national control over them is limited to defensive activity, internal issues,	Quelling of violence, rapid military downsizing, and dramatic changes in the role of the military result in many military leader selections out of industry and government rather than people trained for combat. There is a return to "militia" control at mid levels through the guard and reserves. HOOTW functions grow rapidly with control increasingly in the hands of international teams. Parts of DOD merge with parts of Health and Human Services and the State Department in 2020 to leverage capabilities to provide health, environmental and other services and to "identify, fight and prevent" the evolving context of war/ conflict. Development of leaders experienced in service on regional and international teams. Nationally, services are organized through a

The Third Wave	The Dark Side	Global Mind Change	The Transformation
		and nation-sponsored international rescue missions.	loosely confederated guard/reserve type structure somewhat like the peace corps. Globally, control is directed out of the UN structure through the appointed leaders. NGOs and other organizations cooperate closely with the "military," so that control is typically a team effort.
<b>Combatants</b>			
Increasing requirements for superior abilities. More sophisticated testing to select combatants, more intense basic training, and more training for advanced skills. Longer enlistments in return for longer training commitments, better facilities and family support.	Leaders/officers are recruited from the "rich" and often from military families and military academy graduates. Most other combatants recruited from "poor" areas of the US. Increasing use of mercenaries hired from Third World nations.	The role of traditional Combatants remains essential but decreases steadily over time. Most new personnel are volunteers for national service. Masses of youth become involved in a wide range of public and non-profit sector efforts in the helping arts. Military-led programs are viewed as especially competent. Volunteers work in health, conflict resolution, education, and environmental restoration.	"Combatants" become protectors of peacekeepers, HOOTW personnel and other nation-builders. By 2020, "combatants" are provided superior training and in turn provide helping skills at home and across the globe. They are trained in systems thinking and modeling to help them understand and manage complex situations. Many are trained in ecology so they can foster ecological balance and sustainability.

### 4.1.3 US Health Systems

- ◆ Delivery System Focus
- ◆ Paradigm Shifts from Information Technology
- ◆ Structure and Finance
- ◆ Demographic Impacts
- ◆ Role Changes
- ◆ Environmental Changes
- ◆ Biotechnology

The Third Wave	The Dark Side	Global Mind Change	The Transformation
<b>Delivery System Focus</b>			
Care and prevention are delivered through cyber enhanced home/self care or general health workers.  Care and prevention are deployed by integrated delivery networks.	Delivery system is two tiered. Affluent with advanced care; masses with frugal basic care.  Disaster response for mass casualty situation is common.	Sophisticated home information systems support patients and their families in prevention and in determining appropriate care., including extensive self-care.  “Customized care” geared to individual biochemistry.  Health systems focus on <u>health</u> - personal and community.	Prevention and care delivered through cyber enhanced home/self care or general health workers. Prevention and care are deployed by integrated delivery networks. Personal responsibility for healthy lifestyle is the norm.
<b>Paradigm Shifts from Information Technology</b>			
Electronic Medical Record (EMR), with personal access and control/confidentiality; CDC ensures constant learning from resulting databases; preventive, lifestyle focus reinforced.	There are no paradigm shifts. Little advance from 1990s. Poor medical record security. Poor development of outcome measures.	Home becomes center of health care system with advanced home health information service.  “Healthy Communities” are a major focus.  “Alternative” therapies are assessed and many are routinely incorporated.	There is accessible, secure information and there is a dramatic shift to home-based customized, self care.  Information technologies are critical to developing “nanomedicine” which revolutionizes health care.
<b>Structure and Finance</b>			
Delivery Systems become more vertically integrated.  Profit restrictions led to return to non-profit Integrated Service Delivery	30% of the system is for-profit, and focused on the affluent. Non-profits handle expanded Medicare and Medicaid and related programs.	There is local and community ownership of health care providers with optimization of delivery resources in context of home care. Fewer	National network of ISDN's, design delivery based on local input. Finance system remains split between employer, government and self pay.

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Networks (ISDN) dominance.  The finance system is little changed.	ISDN growth is slowed. The overall structure remains fragmented.	resources are expended on traditional care more are expended on mind and body, community, and alternative approaches.	Nearly all of the populationulation is covered by a quality system.
<b>Demographic Impacts</b>			
Aging puts significant burden on health care system.	The poor remain angry and many young poor are violent. There are high ethnic and religious tensions.	Conditions of the poor improved dramatically in US. Healthy aging lowers health burden.	Language and national borders have effectively disappeared. Economic growth is shared enough to reduce fears. Communication and better transportation lead to reduced urbanization.
<b>Role Changes</b>			
All players on health team play more important role, with MD remaining the captain, but the individual is the focus.	Hierarchical control by administrators and their protocols lessens discretion of all providers.	There are far fewer health professionals. Many now support home care; providers collaborate across specialties, including "alternatives".	There are far fewer health professionals. Many now support home care. Providers collaborate across specialties, including "alternatives".  New kinds of specialties emerge for applications of nanomedicine, consciousness technologies, and other breakthroughs.
<b>Environmental Changes</b>			
Ecological problems are reduced somewhat, despite economic growth.  New drug resistant micro-organisms appear.	High risk behaviors and interracial violence are common among poor.  Pollution related disasters are common. Virulent therapy-resistant infections common among poor.  Tropical rainforest destruction unleashes "new plagues".	Movement toward energy and material efficient technologies lowers environmental impacts on health.  Health care contributes to ecological, social, and lifestyle improvement.  Health care also helps drive community decisions in transportation, housing, and commerce.	Zero pollution manufacturing and energy technologies radically lower environmental impacts on health.  Health care contributes to ecological, social, and lifestyle improvement.  Health care also helps drive community and lifestyle decisions in healthy directions.

The Third Wave	The Dark Side	Global Mind Change	The Transformation
<b>Biotechnology (health and biomedical advances)</b>			
Cancer, hypertension, diabetes are well controlled. Designer recreational drug addiction is a major problem.	For 30% of the population, diseases are controllable; for 70% treatments are rationed.	Dramatic breakthroughs are widely available. Biotechnology progress combine with healthy community and a healthy lifestyle lead to control of most diseases.	There is prevention or control of most chronic diseases. Immune system enhancement is available, through nanotechnology immune machines, drugs, mental imagery, and other mind-body methods. Rapid wound healing is common. Mental illness, violence and antisocial behavior are dramatically reduced.

#### 4.1.4 Warzone Medicine

- ◆ Medical Responses to Evolving Warfare
- ◆ Key Breakthroughs
- ◆ Rapid Expansion Capabilities
- ◆ Threats (Different Enemies)

The Third Wave	The Dark Side	Global Mind Change	The Transformation
<b>Medical Responses to Evolving Warfare</b>			
<p>There is one major regional conflict (MRC) in China vs. India with minimal US involvement.</p> <p>A decrease of 70% in the budget and manpower in the year 2000 and a decrease of 50% in the year 2020.</p>	<p>There are two MRCs. The first is a short but violent conflict between North and South Korea. The second is the Iran Iraq war.</p> <p>The Southern US border with Mexico is an ongoing conflict zone from immigrants. MRC's are less important than maintaining a domestic shield from violence. US forces grow to 1.5M.</p> <p>A decrease of 60% in the budget and manpower in the year 2000 and a decrease of 50% in the year 2020.</p>	<p>There are recurring small conflicts with the US, NATO, and the UN often involved.</p> <p>Successes in OOTWs, from military and NGO's lead to major focus on OOTW. Community sustainability focus. Downsized conventional conflict.</p> <p>A decrease of 60% in the budget and manpower in the year 2000 and a decrease of 30% in the year 2020.</p>	<p>There is a China/India conflict. Repeated Superterrorism and environment-ally induced conflicts lead to global defense/police forces.</p> <p>Some US forces are absorbed fully into global forces, others retain national control but engage in joint force against largely non-state actors (especially terrorism) and environmental induced conflict.</p> <p>A decrease of 70% of the budget and manpower in the year 2000 and a decrease of 30% in the year 2020.</p>
<b>Key Breakthroughs</b>			
<p>There is improvement in quality of care.</p> <p>There is a focus on force fitness and on the forecasting, prevention and management of injury and disease.</p> <p>There are effective hemostatic bandages, airway maintenance and intravenous, biologic and chemical countermeasures for self/buddy use.</p>	<p>There are no major breakthroughs since the 1990s.</p> <p>There is a decline in quality of care.</p> <p>There no focus on force fitness and on the forecasting, prevention and management of injury and disease.</p>	<p>There is a new mission with high quality medicine and personal and community prevention.</p> <p>There is a focus on force fitness and on the forecasting, prevention and management of injury and disease.</p> <p>There are effective hemostatic bandages, airway maintenance and intravenous, biologic and chemical countermeasures for self/buddy use.</p>	<p>There is a new mission with high quality medicine and personal and community prevention.</p> <p>There is a focus on force fitness and on the forecasting, prevention and management of injury and disease.</p> <p>There are effective hemostatic bandages, airway maintenance and intravenous, biologic and chemical countermeasures for self/buddy use.</p>

The Third Wave	The Dark Side	Global Mind Change	The Transformation
<b>Rapid Expansion Capabilities</b>			
Highly rapid medical response capability. "New Draft" requires universal service in peace corps equivalent.	There are limited expansion capabilities.	High capability focused on international rescue and sustainability enhancement missions. Extensive use of reserves.	Very high expansion capabilities. Military health reserve teams for emergency medical and sustainability missions.
<b>Threats (Different Enemies)</b>			
China has a limited war with India; then becomes democratic style government. There is some international terrorism.	North Korea is a major threat.  The Mideast is unstable. Mass migrations and environmental refugees.  Internal violence from rich/poor gap.  International terrorism, including chemical, nuclear, biological weapons exist.	Terrorism, information warfare threats, oil and food shortages occur until 2010, then decline.	Terrorism and information warfare threats occur until 2010, then decline.

## 4.1.5 Health Operations Other Than War (HOOTW)

- ◆ Major Services Provided Successful Patterns
- ◆ Leadership
- ◆ Building Sustainable Nations, Communities
- ◆ Infrastructure

The Third Wave	The Dark Side	Global Mind Change	The Transformation
<b>Major Services Provided Successful Patterns</b>			
HOOTW team is in each OOTW force under a Unified Command.	<p>Initially there is a global HOOTW response capability, but over time most effort is concentrated in US.</p> <p>The poor, often the cause of unrest in the US, are relatively underserved.</p>	HOOTW team is in each OOTW force under a Unified Command; along with expanded volunteer teams.	HOOTW transitions to become simply part of OOTW.
<b>Leadership</b>			
<p>Terrorist destruction of a regional US phone system put MHSS in the lead for disaster relief, in cooperation with evolved FEMA.</p> <p>MHSS stimulates technology development.</p>	<p>Terrorism in US creates need for HOOTW forces, but infighting with FEMA.</p> <p>US HOOTW forces in Estonia killed in biological attack; as a result, HOOTW is restricted to US.</p>	<p>1999 US volcano eruption with mass causalities leads to preeminent HOOTW force deployed inside and beyond US.</p>	<p>Cataclysmic events lead to the brink of destruction from which the US and then the UN HOOTW force earn great respect and help foster a global transformation.</p>
<b>Building Sustainable Nations, Communities</b>			
Focus is on emergency medical training, rather than sustainability.	Little focus beyond medical services, even before restriction of services to US.	Building sustainable nations is a major focus.	<p>Building sustainable nations is a major focus, especially at the community and regional level.</p> <p>Much work done by "virtual teams" and AI "expert agents."</p>
<b>Infrastructure</b>			
<p>Ubiquitous information highway.</p> <p>Wristwatch communicators.</p> <p>Rapid mobile HOOTW teams.</p>	HOOTW teams are poorly supported.	Training, command and deployment infrastructure with high technology and advanced training systems.	HOOTW is a US then UN infrastructure with highly advanced technology and training systems.

## 4.1.6 Health Systems for Military Communities

- ◆ Priorities of Health
- ◆ System Structure
- ◆ Key innovations/Tools
- ◆ Technology

The Third Wave	The Dark Side	Global Mind Change	The Transformation
<b>Priorities of Health</b>			
Priorities of health include prevention, wellness, spirituality, and psychological well-being. Beneficiaries are empowered to take a proactive role in health. Military and community incentives for optimizing health provide social pressures to eliminate tobacco, alcohol and drug abuse so prevalent in previous generations.	Health care is stuck focusing on primary care, diagnosis, and treatment. Euthanasia is legal. Great strides in prevention and wellness never materialized. Military services are spending more on education, social services, and disciplinary actions to cope with unhealthy lifestyles. Drug abuse for the first time in 20 years is a top agenda item for the military.	Priorities of health include prevention, self-responsibility, and wellness. There is an emphasis on spiritual and emotional well-being.	Having mastered disease prevention and treating illness, the focus of health is on emotions, intelligence, and spiritual growth.
<b>System Structure</b>			
Military health care is mostly privatized with government keeping legislative control of the system.	There is an all voluntary military with recruits having decreased education, emotional and psychological abilities.	OOTW is redefined as Health OOTW.	There is a decreased number of medical personnel in uniform due to the ability to provide care over long distances via increased technology.
<b>Key Innovations/ Tools</b>			
There is a proliferation of non-invasive procedures and nano-vaccines.	Technological revolution did not occur as predicted. Advanced technology is cost-prohibitive.	Innovations and technologies proliferate with widespread use.	Technology is everywhere and can do most anything.
<b>Technology</b>			
Traditional doctor/nurse paradigm is broken. Health care consultants and coaches gain credentials as professionals for basic	Military is doing limited testing of advanced technology to determine implications for massive use.	There is interactive video teleconferences (VTCs) for families with deployed members.	Nano-biochips and genetic enhancement are commonplace.

The Third Wave	The Dark Side	Global Mind Change	The Transformation
health promotion. Telehealth and biosensors are commonplace.			

#### 4.1.7 Military Health Personnel/Leadership Group

- ◆ Force Sizing
- ◆ Professional Mix
- ◆ Role Shifts
- ◆ Training

The Third Wave	The Dark Side	Global Mind Change	The Transformation
<b>Force Sizing</b>			
Corps of trained military health care providers. Military health care providers are sent to civilian medical centers for training and education.	Only 25% of 1996 forces remain. Military medical personnel refuse to be sent into harms way. Country is no longer enthusiastic about reaching out and solving the worlds problems.	Total force size is severely reduced (60-80% of 1996 levels). Medical force is even smaller (5-10% of 1996 levels).	No more primary care providers. Health care providers will train people to monitor their own health; health care providers are now health coaches.
<b>Professional Mix</b>			
Increase in computer assisted decision making tools decreases the need for specialists.	Health care providers need to be trained to a level that allows them to function effectively with minimal resources. There is no substitute for experience and education, and a good mix of physicians in the field is essential.	HOOTW is the norm. Health care to support other than active duty is not emphasized as it has been privatized.	Lifestyle counseling and health monitoring are common place to aid in extending or improving lives of service members.
<b>Role Shifts</b>			
Telehealth allows the clinician to remain in contact with the on-site care provider and the patient. Physicians become gatekeepers.	Role shifts are focused exclusively on saving money and moving to the lowest common denominator.	Responsibility for care of the people has been shifted to local governments. Military focuses on HOOTW for OCONUS. International HOOTW consortium is aimed at creating infrastructure, saving money, and ensuring uniformity of effort on a global scale.	Simulations, rather than actual patients are used to support medical education.

The Third Wave	The Dark Side	Global Mind Change	The Transformation
<b>Training</b>			
<p>The military readiness mission remains the primary mission.</p> <p>Personnel trained to help both civilian and military. Soldier medics have become a principal feature of warfighting in 2020.</p> <p>Computer assisted diagnostic and therapeutic algorithms and sophisticated customized adult teaching methodologies have been widely employed.</p> <p>Simulators are widely used for training and certification of surgeons.</p> <p>By 2005, medical centers have been combined with private, state, and federal facilities.</p>	<p>Joint private-federal partnerships are the rule.</p> <p>Because of reliance on computers/machines, when one breaks it profoundly reduces effectiveness.</p>	<p>Service members enter on active duty fully invested with personal responsibility for their own health promotion and disease prevention.</p> <p>Most of the combat arms of the military in 2020 resemble the combat service support of the 1990's.</p> <p>Training is highly individualized.</p>	<p>Realistic virtual reality simulations of life-threatening or life depriving events are used to help train personnel.</p> <p>Simulations are widely used for training in all areas of health care.</p>

#### 4.1.8 Military Health Technology

- ◆ Prevention, Wellness, & Advanced Care
- ◆ Telehealth Role
- ◆ Discovery, Development, Assessment, & Procurement
- ◆ Key Social/ Ethical/Legal Issues

The Third Wave	The Dark Side	Global Mind Change	The Transformation
<b>Prevention, Wellness, &amp; Advanced Care</b>			
Medicare eligibility increased to age 72.  Uninsured aged are taken care of by families.  Home health care dominates the health care infrastructure.  Biological roots of aging are identified.  Populationulation becomes dependent on government for health insurance.  Number of military drop by 200,000	Forecasting, prevention, and management is based on genetic disposition.  Wellness is a condition for employment.  Random specimen tests are used to measure drug use, fitness, and overall wellness  Military bans all tobacco products.  US bans tobacco.	Development of global data banks include data on self health.  Health is as important as wealth.	Quality of life becomes focus of all fitness activities.  Unhealthy lifestyles are not tolerated. Cost, Copays, access and other barriers are expected when individuals fail to "practice good health".
<b>Telehealth Role</b>			
Social and financial pressure deglorify alcohol, tobacco, recreational drug use, bunge jumping, and promiscuous sexual behavior.  Interactive TV becomes the principal information appliance in US home.  The health care industry customizes cable TV. The MHSS begins to broadcast health care programs on the public access channels.  Medical information is tailored to individual's needs and provided to people in their homes.	Health information networks fail to materialize.  There is no increased consciousness of what individuals could do for themselves. Thus they rely on health care providers to physically intercede in their care. This mode of care is less efficient.	Social and financial pressure deglorify alcohol, tobacco, recreational drug use, bunge jumping, and promiscuous sexual behavior.  Interactive TV becomes the principal information appliance in US home.  The health care industry customizes cable TV. The MHSS begins to broadcast health care programs on the public access channels.  Medical information is tailored to individuals' needs and provided to people in their homes.	Social and financial pressure deglorify alcohol, tobacco, recreational drug use, bunge jumping, and promiscuous sexual behavior.  Interactive TV becomes the principal information appliance in US home.  The health care industry customizes cable TV. The MHSS begins to broadcast health care programs on the public access channels.  Medical information is tailored to individual's needs and provided to people in their homes.

The Third Wave	The Dark Side	Global Mind Change	The Transformation
<p>Virtual aging games lead to better lifestyle decisions.</p> <p>The military's enlisting pool populationulation is healthier.</p> <p>Infrequent illness or injury is easily managed with total access to medical histories.</p> <p>Teleconsultation is attained by total access to communication in homes and workplaces.</p>		<p>Virtual aging games lead to better lifestyle decisions.</p> <p>The military's enlisting pool populationulation is healthier.</p> <p>Infrequent illness or injury is easily managed with total access to medical histories.</p> <p>Teleconsultation is attained by total access to communication in homes and workplaces.</p> <p>Alternative health industry influence has expanded.</p> <p>An alliance between traditional &amp; alternative therapies is formed resulting from the competition for health care dollars.</p>	<p>Virtual aging games lead to better lifestyle decisions.</p> <p>The military's enlisting pool populationulation is healthier.</p> <p>Infrequent illness or injury is easily managed with total access to medical histories.</p> <p>Teleconsultation is attained by total access to communication in homes and workplaces.</p> <p>Personal accountability for health plus system accountability for healthy environments lead to total system health and self actualization .</p> <p>Military health care professionals are authorized to develop community health care systems, thus allowing them to bill the individual communities.</p>
<b>Discovery, Development, Assessment, &amp; Procurement</b>			
<p>The procurement of health care technologies focuses on the ruggedization of commercial off the shelf technologies. The MHSS's role is to advise developers of the military specifications of these technologies.</p> <p>Managed care organizations begin funding many projects analyzing health care technologies and health care systems.</p> <p>Technology demonstrations are judged by the military and civilian industries.</p>	<p>2000: Research and Development plateau due to increased military threats, increased military utilization, &amp; increased terrorist threats.</p> <p>Military health care research and development stagnate and technologies are not made available.</p> <p>Upheavals occurred in the MHSS due to poorer health of the enlisted than in the elite class of officers. Officers sought medical care outside the MHSS. Enlisted stayed within the direct care system because they</p>	<p>MHSS provides health care only to active duty members. Care for other beneficiaries is out-sourced.</p> <p>The basic infrastructure for teleconsultation available in existing health care facilities.</p> <p>HOOTW requirements forced military providers to devote more resources to disaster relief and conflict resolution.</p> <p>All military health care has been privatized. Person to person care is virtually eliminated. Systems are developed for home</p>	<p>US acts as global policemen.</p> <p>Surveillance measures were developed to monitor individuals with rare illnesses in hopes of finding the molecular basis for these illnesses and to provide methods to prevent or alleviate these conditions.</p> <p>Regulations and insurance premium surtax penalize individuals identified with lifestyle related illnesses.</p> <p>US life expectancy rose by five years.</p> <p>Lysome Guided therapies,</p>

The Third Wave	The Dark Side	Global Mind Change	The Transformation
Health Promotion, Wellness, and epidemiological resource allocation are critical strategies to MHSS survival  Telehealth extended to Managed Care Support Contract Partners  MHSS drives health care technologies into the homes and workplaces of beneficiaries.	could not afford the cost of co-pays and deductibles.  The draft is reinstated causing revolts from the younger generations against Generation X .	diagnosis and alternative treatments.  Realizing that a domestic military could not be constituted, the US begins to contract out military forces to protect America's coasts.	immune modulation, and nanosurgical robots could be targeted at malignancies and decrepit tissues.  Military medicine is transformed. The force is fitter. Individuals are chosen for specific tasks based on their innate ability to perform the task.
<b>Key Social/ Ethical/Legal Issues</b>			
Practicing medicine across state lines by various forms of telecommunications is legalized and a notional database evolves to monitor clinical privileges which have been granted.	It is virtually impossible to maintain privacy of electronic medical records.  Health care organizations option not to accept high risk or high cost cases.	Increased social consciousness created a resurgence of personal accountability.  Health Club Chains and alternative medical areas became primary areas for medical practices.	Information is abundant.  Solutions are based on the greater good.  Shared values will be developed.  All and only modality of health care: all you need when it is necessary.

## 4.1.9 Military Health Platforms/Infrastructure

- ◆ Direct Platforms
- ◆ Indirect Platforms
- ◆ Care Without a Platform

The Third Wave	The Dark Side	Global Mind Change	The Transformation
<b>Direct Platforms</b>			
<p>Primary care emphasis.</p> <p>Active Duty care facility investment is supported.</p> <p>Other than active duty care is outsourced.</p> <p>New technologies help reduce budgets.</p> <p>Primary focus of MHSS is readiness/not wellness.</p> <p>Technology investment is also for readiness.</p> <p>There is a need for rapid transportation.</p> <p>Telemedicine, and self prescription technology is abundant.</p> <p>Numerous regional conflicts and/or natural disasters are supported by mobile health care vans.</p>	<p>MHSS is Largest medical care provider in world.</p> <p>Focus is on maintenance of soldier as a machine/not on health projection.</p> <p>Inner city (riot) containment is a challenge.,</p> <p>Response team deployments deal with epidemics.</p> <p>There is widespread use of nanotechnology and deprogramming.</p> <p>Generally there is the ability to cure most diseases. There are just no resources.</p> <p>Use of neuro feedback is common.</p> <p>There is widespread use of large megacorps who are profit motivated.</p> <p>Expense of medical operations robs training and morale programs reducing retention which, reduces quality of force.</p> <p>Generally there is an increase in abilities and a decrease in capabilities</p>	<p>World peace and idealism exist.</p> <p>Fully integrated MHSS.</p> <p>Move from MTFs to alternative delivery settings.</p> <p>There is universal health care.</p> <p>Voluntary, low cost health care investment plans exist.</p> <p>Decrease combat role; increase HOOTW role - like 21st Century Peace Corps. Planned living community improvements.</p> <p>There is an increased social awareness.</p>	<p>Global Military Health Services System.</p> <p>Genetically engineered wellness.</p> <p>Decreased number of fixed MTFs.</p> <p>Self sustaining deployable care pods with telemedicine uplinks are common.</p> <p>Support global humanitarian requirements.</p> <p>DNA medical entry requirement to join GMHSS.</p> <p>There are six month deployments to support space platforms.</p>
<b>Indirect Platforms</b>			
<p>Deployable self contained intensive care pods are developed.</p> <p>Only AD care is supported.</p>	<p>There is a reduced budget.</p> <p>Workload has increased.</p> <p>There is no OTAD care.</p> <p>MHSS must cope with</p>	<p>Consolidation of Command and Control.</p> <p>Biotechnology and bioengineering increase</p>	<p>Global commission on health and wellness is created.</p> <p>There are leaps in</p>

The Third Wave	The Dark Side	Global Mind Change	The Transformation
<p>Support tends to be for HOOTW and other regional problems.</p> <p>Requirement is for rapid, light and comprehensive units with nanotechnology, cell regeneration and neuro-reprogramming technologies.</p> <p>Use of lifestyle mapping, healthy course correction, and education is accepted as the norm.</p>	<p>narcoterrorism, inner city violence (rich vs. poor) nuclear terrorism.</p> <p>MHSS adapts with increased rapid transport assets.</p> <p>There is a decrease in the number of fixed facilities.</p> <p>There is an increased reliance on technology, yet a decrease in the education of personnel.</p> <p>There is an absence of infrastructure.</p> <p>MHSS relies heavily on megacorps.</p> <p>Costs increase.</p> <p>Routine maintenance decreases.</p> <p>There is no economy of scale in commercial purchases.</p>	<p>Communicable diseases are eliminated.</p> <p>Environment is made more healthy.</p> <p>People adopt healthy lifestyles.</p> <p>there is a creation of bioliving colonies in underprivileged areas.</p> <p>Perpetual health is a mind set.</p> <p>Socio-cultural-spiritual HMOs are routinely the norm.</p> <p>World becomes a community entity.</p> <p>World-wide education &amp; training becomes a new model.</p> <p>Shift is from disease orientation to holistic maximization of health in multicultural, global society.</p> <p>Advent of home, community, workplace telehealth access with "personal status monitors" occurs.</p> <p>There is an increase in HOOTW.</p> <p>MHSS does DNA screening of recruits in order to create the "super-force".</p>	<p>telemedicine.</p> <p>Nanotech and biochip tech, cellular repair techniques, and programmable artificial immune systems are methods to facilitate care..</p> <p>Life span increases to 110.</p> <p>There are changes in infrastructure of universities. They are moved into "centers w/o walls" using VR skills, proficiency modules, global grand rounds complete with telemed linkages and increased robotics.</p>
<b>Care Without a Platform</b>			
<p>Care is remote.</p> <p>Illness forecasting and disease prevention are mainstays.</p> <p>OTAD care is outsourced.</p> <p>Technology increases.</p> <p>There is an increase</p>	<p>Strife, world hunger, &amp; many small/violent wars yield dispersed MHSS with lack of central direction/coordination.</p> <p>Small pods are left to act on their own. They are expensive/redundant/inefficient with no vertical</p>	<p>Holistic, self-curative powers are emphasized.</p> <p>Biofriendly mind set evolves.</p> <p>Better nutrition is the norm.</p> <p>Alternate energy sources are developed.</p>	<p>Global Committee on Health, Environment, and Community Design idea is accepted.</p> <p>Design of biofriendly communities occurs.</p> <p>Work and living generally confined to local</p>

The Third Wave	The Dark Side	Global Mind Change	The Transformation
<p>forward deployments.</p> <p>There is an increase in non-physician providers.</p> <p>More but smaller conflicts are supported by rapid transport.</p> <p>VR training is commonplace.</p> <p>Genetic screening of applicants is standard practice.</p> <p>The force is smaller, better equipped, and healthier.</p> <p>Mobile forces require their own, organic provider.</p>	<p>integration of medical assets.</p>	<p>Use of wellness teams in HOOTW becomes doctrine.</p> <p>There is a decrease in prevalence of communicable diseases.</p> <p>There is an increase in importance of spiritual well being.</p> <p>A role evolves for community health facilitators.</p> <p>Improvement in telehealth technology occurs.</p> <p>PSMs, mobile ambulatory care units, and uniformed rapid medical response forces are created.</p>	<p>community (with electric telecommuting as required).</p> <p>"Forgiving, healing, and helping" attitude becomes commonplace.</p> <p>Generally, there is a decrease in illness.</p> <p>Behaviors improve.</p> <p>Use of on-line life enhancers and facilitators.</p> <p>Internal health monitors are placed into use.</p> <p>Home/workplace health scanners gain widespread use.</p> <p>New "miracle" drugs are discovered.</p> <p>Physical/ spiritual/social/ emotional approach to care is the medical standard of care.</p>

#### 4.1.10 Military Health Funding Patterns

- ◆ Requirements
- ◆ Resource Constraints
- ◆ Efficiency of Resource Use
- ◆ Rough Forecasts
- ◆ Demand Forecasts

The Third Wave	The Dark Side	Global Mind Change	The Transformation
<b>Requirements</b>			
Vet services & Occupational/Industrial Health Care is deleted. Infrastructure Investment declines. Formal (Med) Education decreases. USHUS & USTFs close. There is a 1000% gain in Telemedicine. There is a 1000% gain in Human Performance. Factors measurement. TRICARE (outsourcing) is a success.	Personal. down to 800K, then back to 1.5 mil. Health Status decreases. Poverty increases. Increase in over populationulation especially in the urban environment. Economy decreases. Telehealth. increases. There is an increase split between the rich and the poor. Missions are increasing without funding.	Economy improved since 1996 . Military operations are decreased; HOOTW operations are increased. Increase outsourcing for non-combatants. Increases in telehealth. All categories of beneficiary needs are being met. Military medical training is integrated within the Services. Military medical services are combined. OTAD care is outsourced. Distributed. learning, internet, CD-ROM, has become the dominant teaching methodology. Training institutions have decreased in number. Military spending decreased from 14 times to only 2 times economic development spending.	Change from defense to protective services - to manage threats from terrorism conflict or political instability, manage environmental degradation, criminal activities., border disputes, merge w Border Patrol, SS, FBI, ATF, EPA, etc. Motivation is to support community needs. A Department for OOTW is created. OTAD is outsourced. There are only 10 life support centers (facilities). A move from TQM to positive outcomes accountability occurred. Research increased by 2000%. Telemedicine was replaced by individual sensory programming.
<b>Resource Constraints</b>			
Prevention & Wellness efforts are increased. Forecast, Prevent, & Manage is the working paradigm.	Funding decreased by 25% then back to '96 levels (not growth). Telehealth increased. Populationulation growth is	There is an increase in wellness. A 40% decrease in funding was realized. Decreased number of	Decrease costs due to changes in technologies & increase efficiencies. Movement from wellness to self actualization.

The Third Wave	The Dark Side	Global Mind Change	The Transformation
<p>A 30% decrease in funding occurred.</p> <p>There is a 40% decrease in forces as compared to 1996.</p> <p>Hospital beds are decreased by 50% as compared to 1996.</p> <p>Telehealth increased.</p> <p>MTF &amp; Civilian mix of services is the normal way of doing business.</p> <p>Increase in HOOTW &amp; building host nation medical infrastructure occurred.</p> <p>R&amp;D mostly is oriented towards preventive medicine and protection of force in harsh Third World environments.</p> <p>Intervention is frequently by telemedicine.</p> <p>There is consolidation of training.</p> <p>Consolidation of Command and Control.</p> <p>Distributed learning, internet, &amp; CD ROM are the new training methodologies.</p> <p>Managed care &amp; capitation funding are proving successful.</p> <p>Smaller, lighter, quicker units are now doctrinally required.</p>	<p>occurring at more rapid rates than in previous times.</p> <p>Urbanization is a problem.</p> <p>The economy is on the decline.</p> <p>It is an unstable political world.</p> <p>There has been an increase in missions.</p> <p>There has been a decrease in health status.</p> <p>Poverty increased.</p> <p>There has been a decrease in access to care.</p> <p>There has been an increase in violent crimes.</p> <p>Increase in infectious disease trend noted.</p> <p>Increase in unsanitary conditions observed.</p> <p>Return of Communism.</p> <p>Increase in prevalence of weapons of mass destruction.</p>	<p>non-combatant military personnel.</p> <p>Decrease in warzone medical missions and increase in HOOTW missions.</p> <p>Outsourcing &amp; privatization of OTAD care.</p> <p>Poverty decreased.</p> <p>Increase in health status noted.</p> <p>Increase advanced care capability was attained.</p> <p>Increase energy efficiency was achieved.</p> <p>Increase sustainable food sources was accomplished.</p> <p>Improvement in economy &amp; lifestyles was noted.</p> <p>There is consolidation of training.</p> <p>Consolidation of Command and Control.</p> <p>Increase in use of distance learning.</p> <p>Increase in managed care &amp; capitation funding.</p> <p>Twice rather than 14 times economic development on military spending.</p> <p>HOOTW change to OOTW.</p> <p>Increase in efficiencies.</p> <p>Improvement in technologies was observed.</p> <p>Smaller, lighter, more mobile capabilities were developed.</p>	<p>Community based system with individual HEALTH CARE decisions.</p> <p>Heart disease eliminated.</p> <p>Genetic diseases eliminated.</p> <p>Dental care need eliminated.</p> <p>Growth in other health professions/ research.</p> <p>Education is major focus of HEALTH CARE system.</p> <p>Technologies nanotechnologies, and commercial breakthroughs are funded by cost savings.</p> <p>Accepted mission is to help to build Third World medical infrastructures.</p>

The Third Wave	The Dark Side	Global Mind Change	The Transformation
<b>Efficiency of Resource Use</b>			
<p>Health care has a system wide focus.</p> <p>Primary care and telehealth are key to the system.</p> <p>The funding system changed from PPBS to RHRRBS (Regional HEALTH CARE Resource Requirements Budgeting System) - for 6 CONUS, 2 OCONUS Regions . The budget planning horizon is only 12 to 24 months.</p> <p>MTFs "compete" for funding - must manage population risk, physical/hospital density, cost factors, population geographic districts.</p>	<p>Very resource constrained. Otherwise, same as Third Wave scenario.</p>	<p>Competitive (3 yr. out) contracts to more efficient civilian HMOs. 25% of resources are for AD force and includes six facilities.</p> <p>Forward deployed and humanitarian relief missions are the focus for AD medical support.</p> <p>Funding determined by the National Health Organization (NHO) (old HHS).</p>	<p>Perfect mix of technology, provider resources, and information management has been achieved.</p> <p>Better (5yr window) demand predictions are made.</p> <p>Reimbursement and resource intensity of care match.</p> <p>Telemed affords world wide consultations.</p>
<b>Rough Forecasts</b>			
<p>Less muscle, material, &amp; energy are needed while ; more knowledge, coordination, &amp; creativity are needed.</p> <p>There is world economic growth.</p> <p>BRAC continued; 12 year delay to realize BRAC savings.</p> <p>Consolidation of command and control.</p> <p>New missions include combating hunger to flood relief.</p> <p>AD only care. OTAD care is from Civilian HMOs.</p>	<p>There has been a populationulation explosion especially in Hyper Cities.</p> <p>Nuclear weapons are used in anger.</p> <p>(Electronic) counterfeiting, communications sabotage, and technology warfare tools are significant problems.</p> <p>Food supplies are inadequate.</p> <p>There has been an increase in terrorism/mass murder.</p> <p>Military size down to 800K then back to 1.5 mil - to be uniformed police force.</p> <p>Retiree care is civilian only with 30% deductible.</p> <p>AD care is more via non-physician health care</p>	<p>Less Warzone; more HOOTW missions are realized.</p> <p>There has been an increase in outsourcing for OTAD.</p> <p>Health status improvement is common.</p> <p>Capacity for advanced care has increased.</p> <p>There has been a decrease in poverty &amp; poverty related illness.</p> <p>Consolidation of Command and Control.</p>	<p>Technology breakthroughs include 2/3 reduction in budget w improvement in health.</p> <p>Most diseases were eliminated via nanotechnology and genetic engineering.</p> <p>There has been a decrease in communicable diseases through programmable artificial immune systems.</p> <p>Decrease in energy costs has resulted from fusion technology.</p> <p>Communities are designed around health.</p> <p>New technologies have helped realize environmental improvement.</p>

The Third Wave	The Dark Side	Global Mind Change	The Transformation
	<p>providers.</p> <p>Federal Budget is still not balanced.</p> <p>Financing debt is large social problem.</p> <p>Telehealth is the only success story.</p>		
<b>Demand Forecasts</b>			
<p>Computers improve speed and accuracy of demand/budget requirements.</p> <p>Political and service unique missions still complicate the MHSS.</p> <p>TRICARE succeeded in eliminating redundancies &amp; inefficiencies.</p> <p>MTF Commanders are placed at risk for their business practices.</p> <p>Efficiency, cost effectiveness, and satisfaction accountability became important.</p> <p>Disease demand and disease outcome management are matched.</p>	<p>Infrastructure investment decreased.</p> <p>HEALTH CARE costs rise - radically.</p> <p>Inefficiencies/ redundancies are significant.</p> <p>Quality is decreased.</p> <p>MHSS survival is greatest threat.</p> <p>Information systems are poorly designed.</p> <p>Staff attrition is pronounced.</p> <p>Difficult to entice civilian providers to take (high risk) MHSS beneficiaries especially due to poor payment for services.</p>	<p>Better forecast of demand and of treatment outcomes.</p> <p>Move from health care management to health management.</p> <p>Communities are healthy and posses optimal quality of life mind sets.</p> <p>Social "belonging" is fostered.</p> <p>Improved environmental, financial, mental, and physical health is attained.</p> <p>Better integration of ALL community services.</p> <p>Politicians become change agents.</p>	<p>Accurate forecasting of social demands: financial, physical, mental, spiritual, environmental, etc. yield better health.</p> <p>Earlier detection &amp; intervention is the standard of care.</p> <p>Improved education is achieved.</p> <p>Emphasis on protective services (safe, secure, and healthy) communities.</p> <p>Defined, measurable, and expected outcomes from information based system assets is achieved.</p> <p>More "Real Time" orientation in satisfying health care needs.</p>

## 4.2 Key Force Abstracts

Based upon the first four months of discussions in MHSS 2020, the Phase I time frame, all the groups matriculated in their discussions to nine global key forces:

- Social
- Technological
- Economic
- Environmental
- Political
- Demographic
- Medical
- Organizational
- Readiness

In Section 4.2 we highlight the major discussion points in a "STEEP-DMOR" analysis. In addition to the key force analysis itself, any leverage areas, culled from the various conversations, have been identified.

## 4.2.1 Social

Elements	SCENARIOS			Leverage Areas
	Third Wave	Dark Side	Global Mind Change	
Education	The public is highly educated. Distributed Learning (internet/CD-ROM) is common. Virtual reality training is common.	Distributed Learning (internet/CD-ROM) is common. There is a universal "Payback" obligation for medical education (military, Peace Corps, Public Health Service, etc.).	Distributed Learning (internet/CD-ROM) is common. "centers without walls".	Educate patients to wellness and healthy life styles. Provide end of life training. Provide ethics training/ education for all. Educate populationulation on health and prevention of basic illness. Change education focus to creativity, innovation, and selfless service. Invest in children. Promote holistic aspects of healthhealth careare.
Global	World is more Asian centered. There are more small limited regional conflicts and terrorism.	Immigration stresses society. Social pathologies grow (US, World). Strife, world hunger and many small violent wars exist . Clan based, Mafia like, structures organize people against chaos. Neofascism is the alternative to chaos.	Global internet town meetings are common. China leads in security and diplomacy, Japan in economics and culture, the US and Europe adapt. Social idealism.	
Law and Ethics		Euthanasia is legalized and increasing.	Quality of life goal is measured by personal and	

Elements	SCENARIOS				Leverage Areas
	Third Wave	Dark Side	Global Mind Change	Transformation	
Community	<p>Financing Federal debt is major social problem.</p> <p>There are increasing moral, legal, and ethical issues related to increases in technology.</p>	<p>Intergenerational conflict.</p> <p>Increase in fundamentalism, split between rich and poor, violent crimes, terrorism/mass murder, and civil disturbances.</p> <p>Decrease in volunteerism for disaster relief services, education, and health status.</p> <p>Crisis intervention, terrorism, and threat of random nuclear events plague society.</p>	<p>Community health and quality of life are major emphases.</p> <p>Community spirit is fostered.</p> <p>Better integration of ALL community services.</p> <p>Helping arts, including health, education, arts, and environment are focus of volunteerism.</p> <p>There are multigenerational volunteers for national service.</p> <p>People organize in nongeographically constrained interest groups using on-line communication.</p>	<p>Terrorism and conflict gives way to peace; a focus on new opportunities.</p> <p>Violence and conflict wane.</p> <p>Spiritual growth is valued.</p> <p>There is high personal accountability for health.</p> <p>System accountability for healthy environments lead to better health.</p> <p>"Forgiving, healing, and helping" attitude is pervasive.</p> <p>A sense of global community grows rapidly. Nation states are less important.</p>	<p>Invest resources for ethical training regarding technology.</p> <p>Promote, require, and reward community health.</p> <p>Instill value for human life.</p> <p>Change end of life expectations (Death with Dignity).</p> <p>Create disincentives to discourage undesirable behavior.</p> <p>Value individual self discipline.</p> <p>Invest resources for ethical training regarding technology.</p> <p>Mitigate the gulf between rich and poor.</p> <p>Strengthen bond between spiritual, church, family and schools.</p> <p>Provide employer sponsored incentives promoting volunteerism in community.</p>

## 4.2.2 Technology

Elements	SCENARIOS			Leverage Areas
	Third Wave	Dark Side	Global Mind Change	
Medical Applications	<p>Electronic Medical Records changed the focus of medicine to management of health rather than disease.</p> <p>Miniaturized equipment improves distribution of emergency response capability.</p> <p>Jetopters have supersonic speed, ability to land at very remote and rugged sites and are fitted with all supplies necessary to respond to emergencies.</p> <p>There is a growing presence of individual biosensors, electronic house calls, and noninvasive procedures.</p> <p>MHSS places health care technologies in homes and workplaces of beneficiaries.</p>	<p>Only modest improvement in medical technology since the 1990s; the technological revolution in health did not occur as predicted.</p> <p>Electronic Medical Record has not been fully realized due to poor quality data and privacy.</p> <p>Disruptions of MIS and communication disrupts care.</p> <p>70% of the populationulation can not get or afford high tech life saving care.</p>	<p>Computers make customized care and in home treatment common.</p> <p>Major advances occur in medical technology.</p> <p>Interactive TV and personal computer merge becoming the principal information appliance in US homes.</p> <p>The health care industry makes healthy use of cable TV.</p> <p>Medical information is tailored to individuals' needs and provided to people in their homes.</p> <p>Virtual aging games lead to better lifestyle decisions.</p> <p>Teleconsultation is attained by interactive video access to homes and workplaces.</p> <p>MHSS places health care technologies in homes and workplaces of beneficiaries.</p>	<p>Breakthroughs make medical information secure, yet accessible for legitimate users.</p> <p>Self-sustaining deployable care pods with telemedicine uplinks are available.</p> <p>Programmable artificial immune systems exist.</p> <p>Health scanners are placed in the home and workplace.</p> <p>The health care industry makes healthy use of cable TV.</p> <p>Medical information is tailored to individuals' needs and provided to people in their homes.</p> <p>Virtual aging games lead to better lifestyle decisions.</p> <p>Teleconsultation is attained by interactive video access to homes and workplaces.</p> <p>There are major advances in biotech and bioengineering; advent of home, community, workplace telehealth access.</p> <p>Personal status monitors are used throughout populations.</p> <p>Technology allows for better forecasting of health care demand and treatment outcomes.</p>

Elements	SCENARIOS				Leverage Areas
	Third Wave	Dark Side	Global Mind Change	Transformation	
Information and Information Systems	<p>The Internet is accessible using wrist watches.</p> <p>Simulation training improves provider education and skills.</p> <p>Technology focuses on facilitating readiness.</p> <p>High tech combatants.</p>	<p>Research is not focused, therefore technology stagnates.</p> <p>Advanced technology is cost prohibitive. Military performs limited testing of advanced technology to study the implications for massive use.</p> <p>Information systems are poorly designed.</p> <p>Society is computer dependent and vulnerable to sabotage.</p>	<p>Technology is driven by social and environmental concerns targeted at wide scale consumer satisfaction.</p> <p>Information is used to build communities, not for cyberterrorism.</p>	<p>Telecommuting is a way of life.</p> <p>Significant technology, nanotechnology, and communications breakthrough funded by medical system cost savings.</p> <p>Worldwide teleconsults are routinely done.</p> <p>Virtual reality skills, proficiency modules, global grand rounds using telemed linkages and increase robotics.</p>	<p>Prevent the development of unethical or environmentally unfriendly technology.</p> <p>Create systems to minimize waste.</p> <p>Create user friendly interfaces.</p> <p>Make widespread access to digital platforms available.</p> <p>Establish industry standards for hardware and software.</p> <p>Use technology to minimize large infrastructure.</p>

### 4.2.3 Economy

Elements	SCENARIOS			Leverage Areas
	Third Wave	Dark Side	Global Mind Change	
Economics	<p>Technical and financial organizations dominate HEALTH CARE marketplace.</p> <p>Healthy lifestyles are incentivized (premiums, copays, deductibles, access).</p> <p>Continuously growing economy with a new basis for wealth creation.</p> <p>Cash transactions, as an exchange medium has declined; transactions are now digital.</p> <p>Efficiency and process improvements have offset increasing costs of health care.</p> <p>Third world nations begin to prosper.</p> <p>Downsize in medical corps.</p> <p>Information based economy.</p> <p>Military spending focuses on high tech weapons and cyberwar.</p>	<p>Economic security is a highly valued product.</p> <p>Increased gap between rich and poor within countries.</p> <p>World economy declines.</p> <p>Military spending is highly police oriented, nuclear threats absorb money.</p> <p>Poor have expanded the roles of governmental programs, while 30% of the population can afford full health care coverage.</p> <p>Increase in health care costs, poverty, and crime.</p> <p>The economy is in disarray. FEMA dissolved due to decreased funding.</p> <p>Elderly face poor economic times.</p> <p>Profit motivated megacorporations operate the health care system.</p> <p>Lack of vertical coordination yields expensive, redundant, and inefficient operations.</p>	<p>Economic growth is more a means than a end in itself.</p> <p>Local health care delivery affords economic efficiency and makes communities financially responsible.</p> <p>Decrease in poverty and poverty related illness.</p> <p>Growing economy.</p> <p>Narrowing differences between the world's rich and poor.</p> <p>Local governments responsible for health care.</p> <p>Fully integrated MHSS.</p> <p>Economic well being improved for nearly all in US.</p> <p>Healthy lifestyles are incentivized (premiums, copays, deductibles, access).</p> <p>Downsize in medical corps.</p> <p>Information based economy.</p> <p>Military spending focuses on high tech weapons and cyberwar.</p>	<p>People value quality of life more than material goods.</p> <p>Focus of health is on well being and enhanced capabilities.</p> <p>Overall economic prosperity due to technological breakthroughs.</p> <p>US is prospering economically yet less materialistic.</p> <p>Savings from traditional medical care is reinvested in spiritual growth programs.</p> <p>Technology breakthroughs cause 2/3 reduction in HEALTH CARE expenses with improvement in health/disease management.</p> <p>"Just in time" system of meeting health care needs.</p> <p>Health care costs lowered due to artificial immune systems and ability for wounds to heal rapidly.</p>

Elements	SCENARIOS			Leverage Areas
	Third Wave	Dark Side	Global Mind Change	
Funding/ Spending	<p>Facility investment for active duty only.</p> <p>Outsource other than active duty care.</p> <p>Declining (bricks and mortar) infrastructure investment.</p> <p>Increase in managed care and capitation funding.</p> <p>Funding system changed to more business like system.</p> <p>Military facilities required to compete for funding on business basis.</p>	<p>Federal budget is still not balanced.</p> <p>Decrease in economy by 35% since 1996; military budget (decrease by 25% and then return to 96 levels by 2020).</p> <p>Decrease in the number of military fixed health care facilities (absence of infrastructure).</p> <p>There is radical health care inflation.</p>	<p>Decrease in military spending.</p> <p>Increase in managed care and capitation funding.</p> <p>Funding for the Armed Forces Institute of Alternative Therapies is supported.</p>	<p>Decrease costs from changes in technology and increases in efficiency.</p> <p>Shift from curative care to prevention, early detection, and management.</p>

#### 4.2.4 Environment

Elements	SCENARIOS			Leverage Areas
	Third Wave	Dark Side	Global Mind Change	
Protection and Management	<p>Environmental impacts decrease in US despite growth. Problems remain with global warming and with atmosphere, ground water, agriculture and industrial pollution.</p> <p>Virulent, drug resistant micro organisms plague society.</p> <p>Most serious environmental problems are in poor nations.</p>	<p>Large scale environmental losses are occurring due to pollution, top soil loss, and the greenhouse effect.</p> <p>There are millions of new environmental refugees; biological weapons are aimed at destroying the environment.</p> <p>Inner cities continue to decay.</p> <p>Unsanitary conditions proliferate.</p> <p>Food supplies are endangered and inadequate.</p>	<p>The shift to garden oriented architecture and away from large buildings has taken the population outside for a much larger proportion of the day. People live in and amongst agriculture and parks.</p> <p>Social and environmental stress points, such as epidemics or aquifer failings, become the focus of environmental efforts.</p> <p>Pollution is significantly reduced. Planned living communities improve underprivileged areas.</p> <p>Unhealthy environments are eliminated.</p> <p>Efficient alternate energy sources are developed.</p>	<p>Pollution is dramatically reduced by nanotechnology based manufacturing.</p> <p>Work and living are more focused on local community (with extensive telecommuting).</p> <p>Cataclysmic events prompted reevaluation of life.</p> <p>Communities are designed around health.</p> <p>New technologies facilitate environmental improvement.</p> <p>There is large increases in energy efficiency.</p> <p>Sustainable agriculture improves food quality and protects the land.</p> <p>Protect the environment.</p> <p>Recycle all waste.</p> <p>Create an intelligent use of environmental resources.</p> <p>Effectively handle nuclear waste.</p> <p>Restore ozone layer or develop a UV shield.</p> <p>Effectively control or eliminate pollution.</p> <p>Safeguard clean water sources.</p> <p>Increase environmental monitoring.</p> <p>Environmental retention (protection).</p>

## 4.2.5 Political

Elements	Third Wave	SCENARIOS			Leverage Areas
		Dark Side	Global Mind Change	Transformation	
Global	<p>Community consensus and voting, in balance, define the new democracy in 2/3 of the world. The rest is clan based and authoritarian.</p> <p>The military is highly integrated and respected in an organizationally complex world.</p>	<p>The rise of Asia has gone along with a world wide turn to clan based organizations.</p> <p>As power falls to smaller semiautonomous improvised clans, politics becomes the coercive power.</p> <p>Governments throughout the world are increasingly unstable.</p> <p>Unstable geopolitical world.</p> <p>Communism returns to the former Soviet Union.</p>	<p>As in Athens, politics is the integrator of the life of the mind and of action.</p> <p>Spiritual beliefs provide value structure in communities.</p> <p>There is less of a nationstate orientation; more global.</p>	<p>As in Athens, politics is the integrator of the life of the mind and of action.</p> <p>Spiritual beliefs provide value structure in communities.</p> <p>There is less of a nationstate orientation; more global.</p>	<p>Balance liberalism and conservatism; capitalism and altruism.</p> <p>Promote ethical leadership in warring communities.</p>
US	<p>Exploitation and high profit margins within the health industry caused legislation to be passed capping profits.</p> <p>There is decreased territorialism between local, regional and federal agencies.</p> <p>Political and Service unique missions still complicate funding.</p>	<p>The US has an increasingly isolationist philosophy.</p> <p>Overseas OOTW missions are not of national interest.</p> <p>Building sustainable nations is of no interest to the US.</p>	<p>America's support and generosity for countries has removed old suspicions and jealousies between nations.</p> <p>The US is the world leader in giving nations the means for development.</p> <p>Successful conflict resolution requires the military health system to redefine itself in order to remain viable.</p>	<p>The military is the leader in developing policies for handling generic information.</p> <p>Creation of Department of Protective Services with emphasis on protective services (safe, secure, and healthy) communities.</p>	<p>Expand the role of the citizen/soldier.</p> <p>Improve the regulations affecting health care.</p> <p>Retain military based health care system.</p> <p>Improve military regulations regarding support of families.</p>

## 4.2.6 Demographic

Elements	SCENARIOS			Leverage Areas	
	Third Wave	Dark Side	Global Mind Change		
General	<p>US populationulation growth stabilizes in middle and upper classes while it continues to increase in lower classes.</p> <p>Recruits are genetically screened.</p> <p>Military's enlisted populationulation is healthier.</p> <p>Illness or injury is better managed with total access to medical histories.</p> <p>Military is a major source of technical education.</p>	<p>Populationulation growth and hypercities are an important issue (Re: health care, sanitation, law enforcement, etc.).</p> <p>Urban cities have high populations of poor, uneducated, close minded young people who are angry and violent.</p> <p>The military is a major source of discipline training to economically distressed recruits.</p> <p>Military is a major source of force declines.</p>	<p>Populationulation stabilizes. Asia becomes a model for living in dense but pleasant urban environments.</p> <p>Military's enlisted populationulation is healthier because of healthier life styles.</p> <p>The military is a major source of discipline training to economically distressed recruits.</p> <p>Quality of force declines.</p>	<p>Populationulation stabilizes. Communities and natural environment support each other.</p> <p>Country borders are open and language barriers are gone.</p> <p>Trend is from violence to peace.</p> <p>Increase life span to 110 for people born in 2020.</p> <p>Military's enlisted populationulation is healthier.</p>	<p>Improve Education Levels.</p> <p>Improve sanitation and living conditions.</p> <p>Reconcile populationulation centers with food production capabilities.</p>

## 4.2.7 Medical

Elements	Third Wave	SCENARIOS			Leverage Areas
		Dark Side	Global Mind Change	Transformation	
Treatment	<p>Hierarchical medicine has changed to comprehensive care interdisciplinary teams. Focus is to prevent medical disasters.</p> <p>There is an increase number of nonphysician providers. The traditional doctor/ nurse paradigm is broken.</p> <p>Health consultants and coaches become recognized as licensed and regulated health professionals.</p>	<p>The emphasis of medical care is on short term solutions. Mass inoculations occur.</p> <p>Continual medical system breakdowns happen.</p> <p>For profit health care systems flourish among the rich. Poor are cared for by not for profit, or government agencies.</p> <p>Controlling "stove pipe" attitudes dominate medicine because of budgetary constraints .</p> <p>Ability to cure many diseases exists but there are minimal resources.</p> <p>Decrease in access to care.</p> <p>Increase in infectious disease.</p> <p>Active duty care is given more by non physician health care providers.</p> <p>Civilian providers tended to be unwilling to take high risk MHSS beneficiaries due to unhealthy lifestyles and lack of adequate payment.</p>	<p>A person's social and psychological states are regarded as important for health as one's physical state.</p> <p>Inpatient hospital care is reduced by 80% since 1996.</p> <p>Home care and outpatient settings are the primary care state delivery locations.</p> <p>Alternative medicine is widely accepted. Some aspects have proven highly effective, some not.</p> <p>Alternative health industry influence has expanded. An alliance between traditional and alternative therapies is formed resulting from the competition for health care dollars.</p> <p>Communicable diseases are nearly eliminated.</p> <p>Access to care is good with most needs being met.</p> <p>Major focus of military medicine is on health infrastructure, building disaster relief, and support for peacekeeping.</p>	<p>Health is fully integrated into the quality of life and culture, focus is on spiritual well being.</p> <p>There is a physical, spiritual, social, and emotional approach to care.</p> <p>Home care and outpatient settings are the primary locations where care is delivered.</p> <p>Patients are well educated about health care.</p> <p>Profiteering on illness care is a thing of the past. All health care personnel are fully integrated.</p> <p>Major focus of military medicine is to prevent, react to and recover from natural disasters.</p> <p>Very few primary care personnel—they teach patients to treat themselves.</p> <p>Major focus of military medicine is on health infrastructure, building disaster relief, and support for peacekeeping.</p>	<p>Lead the medical transformation fostering health.</p> <p>Create trauma reducing programs.</p> <p>Require health care providers to take more responsibility, especially for patient education.</p> <p>Eliminate preoccupation with financially based strategies. Promulgate practice pattern guidelines and outcomes measures.</p> <p>Provide basic health care to all people at the community level.</p> <p>Surveillance measures were developed to monitor individuals with rare illnesses in hopes of finding the</p>

Elements	SCENARIOS			Leverage Areas
	Third Wave	Dark Side	Global Mind Change	
		revolutionizes warzone medicine even as conflicts decrease.	molecular basis for these illnesses and to provide methods to prevent or alleviate these conditions.  Ultra-miniaturized internal health monitors are used.  There are programmable artificial immune systems, cell herding machines and other breakthroughs made possible by nanotechnology.  Consciousness technologies are developed to control pain, and strengthen immune system.	Promote cultural change in society to a wellness orientation.  Empower people to take personal responsibility for their health.  Commit resources to preventative care.  Provide incentives for wellness and healthy lifestyles.  Use societal heroes to promote health.
Wellness/ Prevention	Health promotion, wellness, and epidemiological resource allocation are critical strategies to MHSS survival.  The priority is primary care and prevention. People take a proactive, self directed role in health.  Disease prevention and illness forecasting are essential components of health systems.  Prevention and protection of the military force is the emphasis.	Focus is on maintenance of soldier as a machine, not on wellness or health.	One focus of health is spiritual.  Move from MTFs to alternate delivery settings (home, hospice, alternative therapies, etc.).  Sociocultural HMOs delivering community oriented health care.	

Elements	SCENARIOS				Leverage Areas
	Third Wave	Dark Side	Global Mind Change	Transformation	
Technology	<p>Medicine is technology based, with issues of cost, equity, and ethics.</p> <p>Lifestyle mapping and healthy course correction are standard components of health care.</p> <p>Advanced technologies revolutionize warzone medicine.</p>	<p>There has been only modest medical advancement since the 1990s. The priority is primary care with a focus on diagnosis and treatment. There is no movement to wellness or prevention.</p>	<p>Priority of health is prevention, self responsibility, early detection, and customized care.</p> <p>Shift from disease cure to orientation to disease prevention and health promotion.</p> <p>People widely adopt healthier lifestyles.</p> <p>Role for community health facilitators.</p>	<p>Priority of health is prevention, self responsibility, early detection, and customized care.</p> <p>Shift from disease cure to orientation to disease prevention and health promotion.</p> <p>People widely adopt healthier lifestyles.</p> <p>Role for community health facilitators.</p>	<p>Create alliance between military and civilian telehealth.</p> <p>Establish telemedicine consultation centers.</p> <p>Create an accurate mortality prediction model.</p> <p>Research to create further medical breakthroughs.</p> <p>Research to enhance countermeasures for NBC.</p>

## 4.2.8 Organizational

Elements	SCENARIOS			Leverage Areas
	Third Wave	Dark Side	Global Mind Change	
General Military	<p>Highly interconnected organizational networks, based on economic, security, and technical activity.</p> <p>Military is highly team based and interdependent with other organizations, around a technical agenda.</p> <p>Military health care is privatized, yet government maintains regulatory authority to govern the industry.</p>	<p>Military is viewed as a protection against chaos.</p> <p>Military decreases in size to 800K and then increases back up to 1.5 million.</p> <p>Decrease in funding, infrastructure investment, and routine maintenance of medical equipment/facilities.</p>	<p>There are only six remaining military medical facilities.</p> <p>Forward deployed and humanitarian relief missions are focus for AD medical support.</p>	<p>Embrace technology “multipliers”.</p> <p>Drop implied but unresourced missions.</p>

Elements	SCENARIOS			Leverage Areas
	Third Wave	Dark Side	Global Mind Change	
BRAC continued but 12 year delay for savings.  Commanders/MTFs are placed at risk for efficiency, cost effectiveness, and satisfaction accountability.				Become leaders in american medical transformation.  Promote mentorship.
There is a 50% decrease in hospital beds since 1996.  Much use of mobile health care vans.  Only 8 TRICARE regions (6 CONUS; 2 OCONUS).  There is a Joint Medical Command.  Health promotion is integrated into daily life.	Inefficiencies and redundancies are significant within the MHSS.  Survival is the greatest threat to MHSS.  Upheavals in the MHSS due to poorer health of the enlisted and the elite class of officers.  Officers seek medical care outside the MHSS; enlisted stay within the under resourced direct care system.	There is a consolidated Command and Control within the MHSS.  MHSS is consulting with foreign nations to deliver models of health care compatible with their own lifestyles.  MHSS provides care only for active duty .  Most military health care has been privatized. Advanced home health information.	There are decreased numbers of (military) medical personnel providing care, but large increases in technology.  There is a consolidated Command and Control within the MHSS.  There are only 10 life support centers (facilities) in the military.	Growth in health professions is predominantly in research and education.  Enhanced military medical capabilities due to ability to provide care over distances.  Military medicine is transformed; the force is

Elements	SCENARIOS				Leverage Areas
	Third Wave	Dark Side	Global Mind Change	Transformation	
OOTW/ HOOTW	US military organization for OOTW is strong and internationally recognized.  A HOOTW team is assigned to each unified command.  HOOTW operations are performed by both civilian and military personnel.  FEMA and HOOTW are separate but coordinated agencies.  FEMA and OOTW training is combined in a USHUS like organization.  HOOTW support is increased for regional conflicts and natural disasters.	HOOTW teams have little oversight; exclusively local operations.  FEMA was dissolved due to the country's poor economy.  HOOTW is active primarily within the US borders, but there is decreased esprit de corps of caregivers.  FEMA and HOOTW are separate but coordinated agencies.  HOOTW support is increased for regional conflicts and natural disasters.	HOOTW focuses on disaster relief and conflict resolution.  There is decrease in the military's combat role and an increase in a HOOTW role (similar to 21st Century Peace Corps) use of wellness teams.  HOOTW capabilities increased as technologies progress.	There is a global HOOTW-like organization for responses to natural disasters.  US military organization for OOTW is strong and internationally recognized.  A HOOTW team is assigned to each unified command.  HOOTW operations are performed by civilian and military personnel.  FEMA and HOOTW are separate but coordinated	Redefine roles, especially health/health care roles.

Elements	SCENARIOS			Leverage Areas
	Third Wave	Dark Side	Global Mind Change	
New HOOTW missions—from combating hunger to flood relief.		agencies. FEMA and OOTW training is combined in USHUS.		

## 4.2.9 Readiness

Elements	SCENARIOS				Leverage Areas
	Third Wave	Dark Side	Global Mind Change	Transformation	
General Readiness Issues	<p>Readiness requires great technical capacity.</p> <p>Military capacity is tested by high tech and quick response requirements to very complex information needs.</p> <p>There are increases in rapid an light transportation, telemedicine and self diagnosing technologies.</p> <p>Increase in forward deployments.</p> <p>Increase in building host nation infrastructures.</p> <p>Smaller, lighter, quicker units.</p>	<p>Readiness declines due to resource constraints and fitness of the force.</p> <p>There is an all volunteer military with decreased educational, emotional and psychological abilities.</p> <p>Deployments are sent to deal with epidemics.</p> <p>There is an increase in narcoterrorism, inner city violence (have/have nots), and nuclear terrorism.</p> <p>There is great reliance upon rapid transport assets.</p>	<p>Peacekeeping and environmental disaster relief become primary military missions.</p> <p>There is an increase in resources for primary military missions.</p> <p>Basic infrastructure for teleconsultation available in existing health care facilities. Thus, investment in significant new (bricks and mortar) infrastructure declines.</p> <p>Military has a mission to build 3rd world medical infrastructures.</p>	<p>Protection from biological assault and protection of the planet become primary missions.</p> <p>Readiness is built into mind set for protection.</p> <p>External threats, asteroids, virus mutation, emergent psychological phenomena require vigilance and promote transformation of societal values.</p> <p>Individuals for the military are chosen for specific tasks based on their innate ability to perform the task.</p> <p>There is a total redesign of military mission and education.</p> <p>Increase in weapons of mass destruction being possessed by subnation state groups; nuclear weapons are “fired in anger.”</p> <p>(Electronic) counterfeiting, communications sabotage, and new technology warfare tools proliferate.</p> <p>Military used as uniformed police force.</p> <p>Some combatants are third world and inner city</p>	<p>Better manage deployability of active duty personnel.</p> <p>Find ways to better access alternative training environments (Trauma Centers).</p> <p>Make deployable systems more mobile, faster, and more capable.</p> <p>Make the distinction between the combatant and the noncombatant.</p> <p>Think of Readiness for other than war.</p> <p>Military has deployments to support space platform operations for peace keeping, environmental monitoring, etc.</p> <p>Change from Department of Defense to Department of Protective Services.</p> <p>Strong and active US and overseas volunteerism for post HOOTW activities.</p> <p>Combatants become more</p>

Elements	SCENARIOS				Leverage Areas
	Third Wave	Dark Side	Global Mind Change	Transformation	
	mercenaries.	Mercenaries are 'for hire' to gov't or private organizations. Super terrorists (factional not representative of any nationstate).	like emissaries; medical emissaries are highly skilled, operating at patient and total environment levels and across institutions.		

## SECTION 5.0 THE CONVERSATION

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The Phase II group scenario development centered on relevant military topics within the framework of three macro categories: The Surrounding Global Community, Military Health Environments, and Military Health Resources. The goal for each group was to explore variations of what the future MHSS might look like without constraints on their imagination and creativity. Each work group developed a picture of the future within the context of their respective topic area(s) across each of the four overview scenarios. The style is a synthesis of each group's authors. The content is a reflection of rich discussions within the various groups. There are differences in style as well as approach, due to differences in underlying assumptions and forecasts within various groups. Many authors wrote as if writing a novel and consequently, we believe the authors provide an interesting look at our future world, our country, and the 21st Century Military Health Services System.

The matrix inside the back cover of this report provides a quick review of the working groups and their subordinate topics across the four scenarios.

### 5.1 Surrounding Global Conditions

Surrounding Global Conditions is a macro category for three work group elements: Future of the Global Community, Combat, and the US Health System. These surrounding global conditions provide the background for the more detailed discussions to follow on military health environments and military health resources.



#### 5.1.1 Future of the Global Community

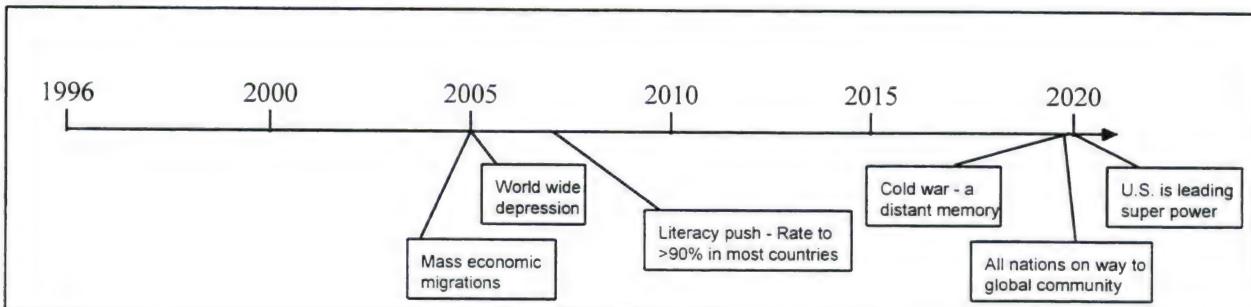
The following sections explore, within each of the four scenarios (The Third Wave, The Dark Side, Global Mind Change, and The Transformation), the future of the Global Community focusing on Impact of Major Global Shifts and Successful Patterns. The timeline illustrates the participant's view of the future in the Third Wave.

##### TOPIC AREAS

- ◆ Impacts of Major Global Shifts
- ◆ Successful Patterns

## The Third Wave Timeline

The following timeline illustrates the participant's view of the future in the Third Wave.



### Impacts of Major Global Shifts



By 2020, the Cold War is a distant memory. The United States is the leading Western Super Power, with Japan at the vanguard with advanced technology, infrastructure, and systems capability. South Korea technologies are between Second and Third Wave, while employing many First Wave technologies. Other Asian nations constantly jockey for position in this evolving spectrum. As the regional Third Wave leader, Japan stands to gain the most from fostering further evolution of the regional neighborhood of nations. Promoting trade, sharing technology, and guiding multinational corporate investment are some of Japan's responsibilities as regional leader. The management of internal concerns, such as population growth and political orientation, remain individual governments' responsibility. The worldwide depression in 2005 caused mass migration from poor countries to richer countries. As the population of poor immigrants soared, enlightened self-interest in the richer countries caused their populations to realize that working with poorer nations to ensure a basic standard of living was in the best interests of all concerned. A huge literacy effort, effected by training cohorts of the respective populations, was a major thrust in the poorer countries. This effort achieved greater than 90% literacy in nearly all countries. Increased information technology use followed increased literacy. By 2020, all nations are on the way to developing a global community.



### Successful Patterns

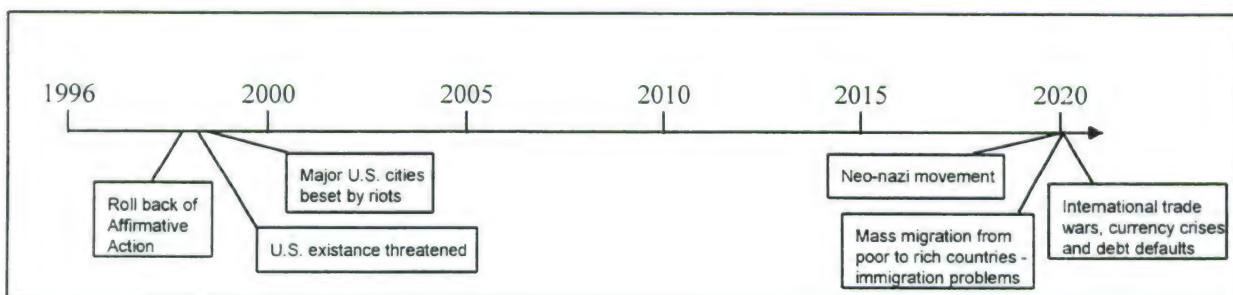


The Asian tigers developed vigorous, high-growth economies coupled with an orderly society, by combining capitalism with a small,

highly efficient government that supports the private sector rather than over-regulating and competing with it. By 2020, public and private partnerships are the norm, combining the abilities of motivated people working through organizational units. A Third Wave United Nations represents various entities, such as multinational corporations. The UN also employs a professional military to keep peace and deal with international criminals. An advanced information infrastructure enables distance learning and telehealth, via fiber-optic networks to and from televisions that reached all but the most remote areas. Many of the less developed countries leap-frogged the dated infrastructure of the more developed countries during the late twentieth and early twenty-first centuries. Increased literacy and information access helped the poorer countries to ensure their people a basic standard of living as they decreased their population growth rates. As countries' inhabitants became more satisfied with their local living standards, mass migrations slowed to a trickle.

## *The Dark Side Timeline*

The timeline illustrates the participant's view of the future in the Dark Side.



## Impacts of Major Global Shifts



Desperation, anger, and envy smoldered, bringing an increasing awareness of the discrepancy between the people in the richer and in the poorer nations. Television's pervasiveness assisted the dark side, with its too optimistic portrayals of life in developed countries. This created a mass migration from poorer to richer nations. This volatility appeared in other areas of international dialogue, including trade wars, currency crises, and debt defaults. A rising Fascist movement in a united Germany was a threat. Moslem expansionist movements in the former Soviet Union and racism, fueled by overwhelming immigration, encouraged the neo-Nazi movement. The movement echoed through Europe and the United States, aided by satellite transmissions among these neo-Nazi

groups. The United States had its own immigration problems. Overwhelming border pressures from the disenfranchised in Central and South America created pressure within the United States to control its southern border. The states along this border were incapable of stemming the immigrant tide, maintaining they could not be held accountable for health care and educational crises generated by the refugee floods. In a bizarre return to earlier roots, all four remaining Army divisions were deployed to the American Southwest to protect the "frontier." They went after international drug traffickers and undocumented foreigners with the same zeal used in pursuing Pancho Villa. Angered by the roll-back of affirmative action in the late 1990s, urban African-Americans lashed out with violence to address perceived injustices. Major US cities were beset with periodic riots. These tensions were not met with understanding and compassion, but with a minority group of violent neo-Nazi, white supremacists who drew on the European movement's strength. The National Guard was mobilized in several states. Federal troops were deployed to Washington, DC, to deal with the explosive instability. The US faced the most challenging times since the Civil War. Problems of race, immigration, and inability to finance the social safety net for the most vulnerable citizens created tensions that threatened the Union. The resultant inward focus placed military forces in a different context. The emergent Fascist threat had military leaders vigorously planning how to mobilize a large Defense establishment. Initial discussions included the first serious dialogue on conscription since the 1960s.



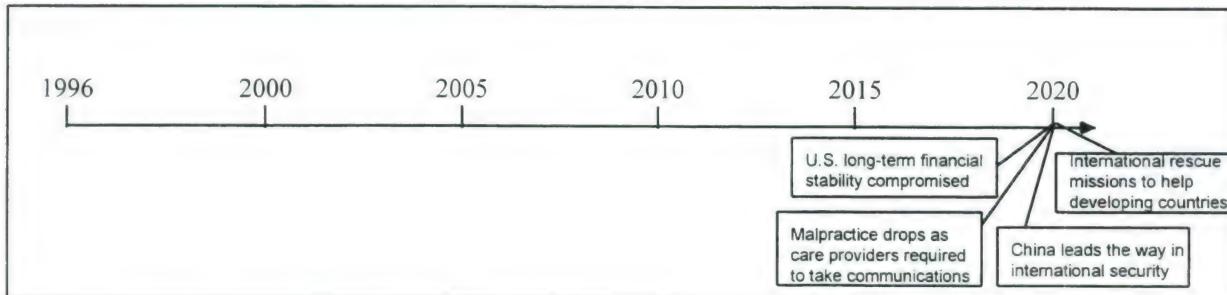
## Successful Patterns



Military virtues were strengthened and stood out during this time of confusion, despite continued assaults from without and within. The military's discipline, combined with the promise of education, made recruitment easier. The expansion to a larger force provided the impetus for the military to abandon expensive acute health-care models and implement community-based, preventive models. Telemedicine and telehealth were utilized extensively, with office and home Internet connections for every person in the military. One of the biggest challenges to the military had been the force for disintegration from within the ranks. The tendency for the poorer soldiers who were employed to protect richer communities against the riots of poorer communities, had fragmented the spirit of many units. The military was successfully investigating strategies to overcome this tendency.

## Global Mind Change Timeline

The timeline illustrates the participant's view of the future in the Global Mind Change.



### Impacts of Major Global Shifts



The Western Pacific's reliance on the United States for financial stability was eliminated as those countries realized that the US's long-term stability was compromised by bearing almost the entire financial burden for that stability. Japan maintained its hegemony by decreasing military expenditures, and by using economic relations and cultural exchanges as the means to security. China led the way in international security by refining its ancient habit of summoning distant rulers, displaying great numbers of soldiers, and then presenting lavish gifts. This left the visiting rulers feeling obligated and intimidated, but not inclined to war.

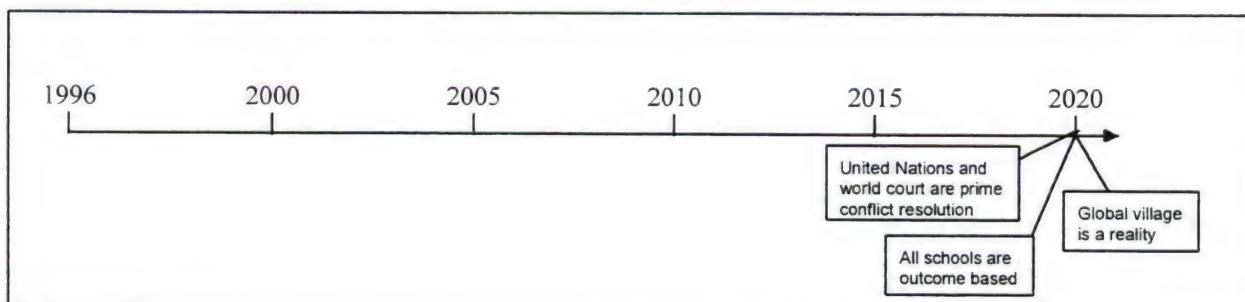
### Successful Patterns

The United States and other affluent nations pioneered new patterns of sustainable development that created economic opportunity, a healthier environment, and social fairness for the developing nations of the world. Dramatic population increases in China, Malaysia, Mexico, Africa, and India were met with multidimensional strategies by an increasingly powerful United Nations. Internationally agreeable, rational migration and immigration patterns diminished the pressure posed by certain regional population explosions. Agricultural technology transformed practices in the developing nations that enabled them to increase their food supply by several orders of magnitude. A mini-Industrial Revolution began. New ways of generating wealth were found in specialization, customization, and centralization of work in every sector of developing countries. International rescue missions prevented breakdowns in nations with the most severe

developmental problems. Each country has community groups that worked with their people to encourage healthy living habits. Community members optimized their health care, using the best combination of technology and personal intervention. These community groups supported patients and their families through times of illness and death. Physicians returned to their role as leaders, working collaboratively with other health-care providers to identify what worked best for patients based on outcomes research. All health-care providers, including physicians, were required, as part of risk management, to attend communications workshops and yearly training updates. The incidence of malpractice cases dropped sharply, increasing money available for health care.

## ***The Transformation Timeline***

The timeline illustrates the participant's view of the future in the Transformation.



### **Impacts of Major Global Shifts**



The global village became a reality as its members sought to build bridges among themselves for greater shared understanding. Policy-makers in their respective countries offered financial incentives to encourage this bridge-building. Global community members used "common goal" strategies instead of "common enemy" strategies to work together.



### **Successful Patterns**



Nearly all the world's countries relied on the United Nations and the World Court's binding arbitration for conflict resolution, relinquishing their sovereignty in issues of international importance. Each community developed its rites of passage, drawing on the collective wisdom of traditional cultures. Through universal service, all youth learned to confront previous failings in their family or school lives, overcoming those

weaknesses to become contributing adults. Communities established their own standards of conduct, each of which included the basics as determined by the United Nations. Schools were outcome-based, with every student required to pass basic literacy and computer literacy courses. The best qualities represented in the military, combined with the best qualities of other institutions, acted synergistically in transforming society. The best of the warrior ethic combined with the best of the peacemaker ethic fostered a remarkable transformation.



### 5.1.2 Combat

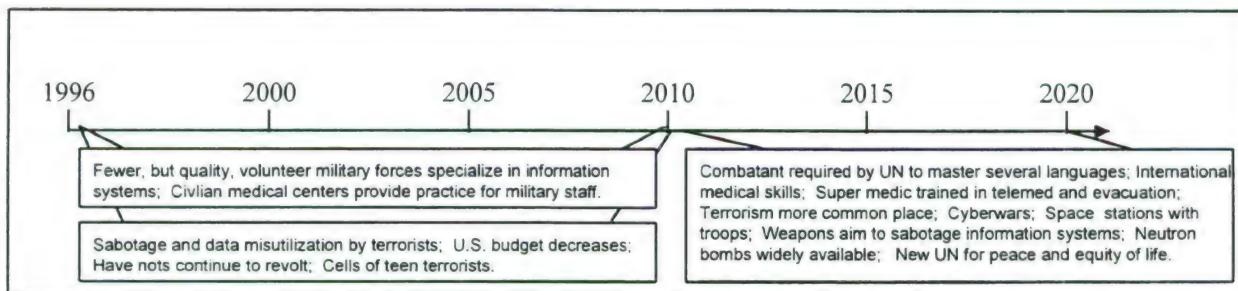
The Combat and Combatants group addressed soldiers on battlefield issues impacted by changing political, technological, and economic environments with other contingencies driven by the four scenarios studied. The following section focuses on Spatial Dimensions of Combat, Weapons, Control of Military Forces, and Combatant(s) across the four scenarios.

#### TOPIC AREAS

- ◆ Spatial Dimensions of Combat
- ◆ Weapons
- ◆ Control of Military Forces
- ◆ Combatant(s)

### *The Third Wave Timeline*

The timeline illustrates the participant's view of the future in the Third Wave.



### Spatial Dimensions of Combat



**1996-2010:** Military, national, and world infrastructures were dependent on information systems. Access to information systems made it easier for terrorists to sabotage and misutilize data. Terrorism created "copy-cat" phenomena (i.e., Oklahoma City, Waco, Freemem, etc.). US and Russia conducted joint operations on space stations. The national budget continued to lessen and competition for dollars resulted in a

much smaller active military force. Poorer and oppressed people continued to revolt against existing governments and were assisted by sympathetic groups. The US military was tasked to perform peace-keeping missions. Manned multinational space stations were deployed.

**2011-2020:** Boris Yeltsin died but there was no impact. Cyber technology continued to proliferate. Spotty events of cyber warfare were noted. The US established small space colonies using the successors to the space shuttles to transport and assemble them—corporate sponsorship was evident, as were industrial applications of the technology. Terrorism became more commonplace, and limited regional conflicts continued to flare and persist across the globe.

**2020:** Combat typically consists of fighting terrorist acts on US soil, against US interests, against US citizens, and against US worldwide holdings. Cyberwars require satellite defense forces including space stations, troops, and technicians, to maintain high technology equipment. Special medical needs due to prolonged negative gravity exposures have been solved. Limited regional conflicts are quelled with minimal force intervention. Health operations other than war forces may be non-government organizations, military, or a combination of the two depending on the mission. Military medicine consists of highly-trained medics with telemedicine and rapid evacuation capabilities.



## Weapons



**1996-2010:** Information systems warriors became expert at leveraging their capabilities. Non-lethal but adequate means of group control were perfected—stun guns, nets, and noise approaches were used to respond to the proliferating cells of mid teen terrorists popping up sporadically. Directed energy systems were mastered and used to prevent major regional conflicts through "mutually assured destruction" threats. Some advances were made in psychological warfare methods. A stand-off super jet helicopter was developed to deliver a variety of munitions to pinpoint accuracy or over a wide terrain. New cruise missile systems were developed to do the same thing as their predecessors, except that the missiles were tiny and the weapon was ultraconcentrated. Neutron bombs and mini-nucs were not difficult to build, but sources of components were fairly well controlled.

**2010-2020:** Information technology and trained technologists were increasing. Basic programming became very easy, so breakthrough cyber terrorism was not uncommon. Ultra

advanced programming and capability for espionage of information systems continued to be limited to the expanding elite. Psychotropic agents and techniques were being perfected. Advanced rapid transportation systems were developed for military applications and for the few that needed to travel on business. Genetic engineering was routinely performed but was primarily controlled through ethics and fear. Telepathy techniques were investigated for weapons application.

**2020:** A continuing need for conventional weapons exists but weapons of choice are information system disruption or sabotage—"Virus like" agents projected into information systems through the satellite transmissions. Highly skilled technologists, using their enhanced mini-CRAY computer systems, act both as offensive and defense weapons. Chemical agents, combined with several time-phased actions are effective immobilizing weapons available for use. A variety of psychological and hypnotic techniques are perfected to mitigate enemy combatants. Stun noises are used to immediately incapacitate enemies. Directed energy beam lasers and microwaves are targetable to exact locations over broad expanses. Superwaves are useful in altering the brainwaves of populations challenged by disease to improve or hamper targeted populations' immune system response. Genetically-engineered pathogens have been tagged to common cold and flu viruses that have critically controllable half-life. Neutron bombs are widely available to fundamentalist radicals, and mini-nucs are sporadically seen. Various stun guns, deployable micronets, and other riot control weapons are used to quickly control mini terrorist outbreaks. Highly efficient planes can transport high tech warrior medics that can rapidly train indigenous nationals to help with health operations other than war.



## Control of Military Forces



**1996-2010:** Cooperation and collaboration between NATO,

Russia, China, the Arab League and the United Nations created a complex system where continued bickering compromised results in rotating joint and multi-member leadership teams. These teams controlled international forces used in the face of limited regional conflicts. Difficulties in resolution of control led to extended periods of discussion and compromise while conflict raged in isolated hot spots. Such difficulties led to grudging allowance for unilateral intervention by the most interested power, nation-state, or alliance.

**2010-2020:** Advances in information technology provided more rapid resolution of disagreements surrounding control of forces and the gradual establishment of the new "United Nations" for peace and equity of life. Advances in weapons systems allowed for rapid deployment of "protected" conflict resolution teams into the limited regional conflict zone under the communications and action control of the UN conflict committee. This UN committee evolved into a small group, the International General Officer Corps, in which leadership roles were rotated.

**2020:** A United Nations-like organization has evolved which has a military leadership structure responsible for control of combatants. Forces, along with their mid-level leaders and offices, come from a variety of nations.



## Combatant(s)

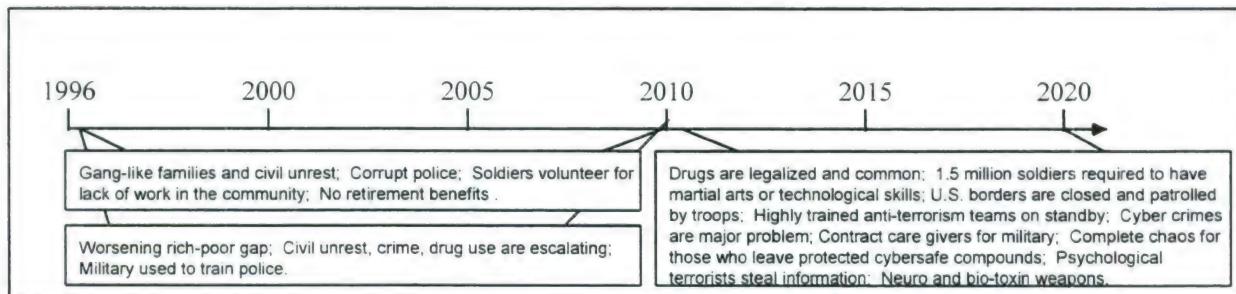


In 2020, combatants are selected for service based on genetic testing and a series of psychological survey tool results. Individuals prepared to meet the special needs of the DoD are immersed in physical and mental conditioning programs to prepare them for their jobs as highly trained specialists. Skill sets of particular importance include hand-eye coordination and ability to think both systematically and critically. Individuals with high energy and quick reflexes are recruited because they think and perform differently from the masses. Intense basic training is required because of the advanced skills needed by future combatants. Even though computer assisted systems have full voice and thinking recognition, the combatants require much training so that they can effectively use the complex systems to carry out their duties. The role for the "warrior" has changed from traditional bombs and bullets threats.

Other types of threats require other types of protective forces, which may not be strictly military. There is an enhanced role for reservists since they are in the local community (like police) and are formally trained and organized (like the military). The relationship is like the "SEAL" or other special forces units with tremendous skill and training required by all team members, with teams having great loyalty to their leader and mission. There are longer enlistments in return for longer training commitments, improved facilities, and assuring warriors that their families were well supported. The role of the citizen-soldier is enhanced; "super-medics" and contract physicians in rear areas or on ship treat the troops. Warriors are injected with nano-bots to make them healthier and stronger.

## The Dark Side Timeline

The following timeline illustrates the participant's view of the future in the Dark Side.



### Spatial Dimensions of Combat



**1996-2010:** Public opinions started to show increased concern for stopping illegal immigration and limiting involvement in health operations other than war. The worsening rich-poor gap increased the number of poor. Civil unrest, crime, and illicit drug use escalated. Citizens demanded more government intervention at home instead of abroad. Military advisors and instructors were utilized to train police forces and other para military.

**2011-2020:** The size of the military increased to meet the threats of the time, with a large-standing stateside active duty and reserve component military. Scarce federal resources were used to build advanced weapon systems to meet the threat posed by the former Soviet Union and China. A highly trained elite anti-terrorist force was constantly on standby to counter terrorist actions or penetrations of our borders. Cyber crimes and terrorism were major concerns. Forces deployed worldwide in health operations other than war were recalled to protect the continental US.

**2020 and Beyond:** US forces number over 1.5 million and are garrisoned in the continental US as part of a containment policy to protect against the growing violence in the world. The US borders are closed and patrolled by military and para-military forces to prevent illegal immigration and drug traffic. Forces are also used in traditional police roles, as special weapons and tactics teams, investigating cyber crimes, and managing prisons. US airspace is heavily protected against invasive aircraft and missiles.



## Weapons



**1996-2010:** Information technology proliferated. High

technology weapons were inexpensive and commonly available for all kinds of factions. Designer biological and chemical weapons were created by teen terrorists. Terrorists and small nation-states leverage technology developing their own arsenal of weapons of mass destruction: genetically engineered biological agents, advanced information system debilitating viruses, nuclear weapons, and designer addictive and mind destructive drugs.

**2010-2020:** Information mania was rampant—everyone relied on a variety of personal protective devices that protected them from information robbery. Corporate cyberwar and antiwar systems developed. There was an intense, escalating development race between the rich and the poor for information power. Terrorists cooperated for short durations to leverage their technical weapon skills. Advances were made in using telepathy as a weapon. Corporate technology warrior cells, considered essential for survival, developed vast arrays of defensive strategies and tactical weapons along with ever-increasing offensive capabilities. Encryption systems became essential for survival and were a primary defensive weapon. Health informatics, monitoring, and mentoring systems were key to survival of the individuals and warriors alike.

**2020:** Complete chaos exists for those that leave protected cybersafe compounds without their instantly updatable cyber protection mini computers with them. Psychological terrorists and the poor lurk in the safe neighborhoods of the rich and use advanced stunning techniques, noise, and psychoactive agents to control their victims while robbing them of information. Organized business warriors patiently wait in cyberspace for opportunities to gain advantages. International terrorists find opportunities for disruption of the control systems of governments, monetary systems, and exchanges. Terrorists sabotage education systems and control access points for energy, food, water and media. A variety of directed energy weapons and are in the hands of international terrorists—lasers, microwaves, sound waves, and noise, brainwave vibrators, and electromagnetic pulse guns. Teenage terrorists control mini empires in Third World countries by combined use of multiple weapons and control of information systems. Genetically engineered pathogens are commonly available and control methods are only slightly less available. Neuro and biotoxins are special weapons of terrorists. Frequently, the rich have antipathogen control systems. A variety of small nuclear weapons are available, but greed makes the neutron bomb the nuclear weapon of choice because of its ability to kill

without damaging property. Holographic illusions are very commonly used defensive weapon. Most weapons leave the body intact but destroy the mind and spirit.



## Control of Military Forces



**1996-2020:** The UN slowly lost all control over the use of blue beret soldiers and control reverted to smaller conclaves of nation-state like structures. The availability and inexpensive nature of information systems allowed terrorists to penetrate the control systems of many nation states, resulting in a lack of cooperation among states.

**2010-2020:** A confederation of rich states and nations slowly evolved toward limited information sharing and cooperative ventures to quell the attacks and actions of the poor. Trust continued to be a problem but encryption techniques helped to lessen concerns over compromise of internal control systems. The rich viewed the confederation essential in combating the poor masses.

**2020:** A UN structure exists but only functions as an intermediary that attempts to resolve crises between forces. Control is in the hands of many; the military exists at the edge of anarchy. Each terrorist group has its own leadership, many of which are constantly bickering. These terrorist groups sometimes team together to fight a "common enemy" but rarely relinquish full control to each other. Nation-states have become smaller armed encampments with physical and electronic walls; and control is limited to the leaders within a zone. A confederation has evolved to allow them to fight off the vast populations of poor; control is shared by the confederate teams.



## Combatant(s)

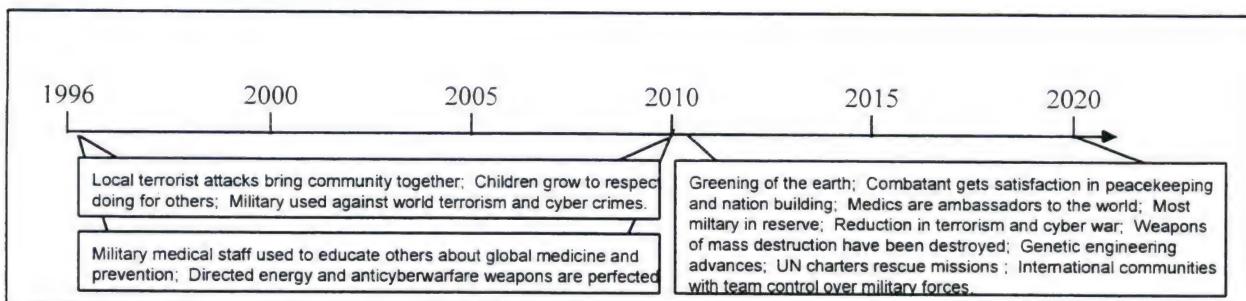


**2020:** Combatants are mercenaries hired off the streets of Third World nations and poor areas of the United States. They are brainwashed and controlled through high levels of discipline, team building, inclination of values, and incentives. They are trained in the use of martial arts, computer technology, and advanced weapons systems essential to counter the forces exerted by the masses against the rich. The leaders and officers are recruited from the rich. Frequently they come from families of previous military personnel and those that are graduates of the military academies.

Combatants do not appear to be traditional military. They look like a kid down the street or a homeless, street kid.

## Global Mind Change Timeline

The following timeline illustrates the participant's view of the future in the Global Mind Change scenario.



### Spatial Dimensions of Combat



**1996-2010:** Military forces were used against terrorism and cyber crimes worldwide. The agreement to limit combat and not to disagree violently allowed the military to slowly and voluntarily reduce operations and size. Military medical personnel were utilized in academia to share their expertise in global medicine and disease prevention.

**2011-2020:** International needs for aid increased the need for health operations other than war. The reduction of terrorism and cyberwar threats allowed military forces to decline in numbers. Militaries were recruited for operations other than war as part of their voluntary national service.

**2020 and Beyond:** A small active military is utilized for health operations other than war. Militaries are in a reserve status in the event of need. They are used to promote peace through medical support missions. Military medical personnel are assigned to medical non-government organizations as coordinators to facilitate health care delivery worldwide.



### Weapons



**1996-2010:** Directed energy weapons such as lasers and

microwaves were perfected and used to control and limit small regional conflicts. Psychotropic agents and stun technology were developed and used in immobilizing terrorists and combatants in limited regional conflicts. Anti cyberwarfare systems, encryption advances, and other technology initiatives ended cyber invasion and monitoring.

**2011-2020:** Military medical training changed focus to health, prevention, and nation building as the academies trained the human weapons systems of the future. Skills and weapons systems of the warriors included linguistics and computer assisted linguistic specialists to set up mini computers and distance learning centers. Computer assisted community building skills were used to advantage in health operations other than war. Advanced crowd control systems were used to quell small insurrections. Advances in genetic engineering led to development of designer vaccines and immunogenics to combat natural diseases and mini terrorist outbreaks. These developments reduced one of the last weapons of terrorists' cells and led to the enlightenment of oppressed people.

**2020:** Arsenals are limited as weapons of mass destruction and most wound inflicting weapons have been destroyed. Primary weapons include systems to control crowds, such as psychotropic agents, projectile deployable mini nets, stun guns, noise systems and special agents skilled in conflict resolution. Primary weapons of health agents include: immunizations, rapidly acting immunogenic drugs, rapid water purification systems, and mini irradiating and food preservation systems. Reverse insect pheromones are ultra-effective in repelling vectors. Ultra-lightweight communication and learning centers are used to educate and improve living conditions in those hot spots that flare up in the world.



## Control of Military Forces



**1996-2010:** Nation/state teaming in the face of international crises related to food, oil, and religious fundamentalism created cooperative leadership cells among treaty organizations and even within segments of the UN. The chaos and violence during this period engendered the realization that control through cooperation was essential. This movement led to the creation of international cooperatives that teamed to abate cyberwarfare and terrorism.

**2010-2020:** Global economic factors coupled with the realizations founded in the chaos of the previous 15 years resulted in the evolution toward international communities with team control of their military forces. Teams formed and were dissolved as the needs presented

themselves. The UN was respected again and became a focus for international and economic teams for control of conflict situations.

**2020:** The UN charters "International Rescue Missions" under the control of consensus leadership to quell problems and use military planning and intervention skills to prevent and abate conflict. International interconnectedness has resulted in the establishment of an International UN Leadership Corps that is respected and accepted. The UN leadership corps is placed in charge of the forces assigned to it to quell minor uprisings and to facilitate "agreements not to disagree violently." Some nations/states/regions/cities continue to have their own military/police type forces but they are primarily limited to addressing internal issues and mini state-sponsored rescue missions.



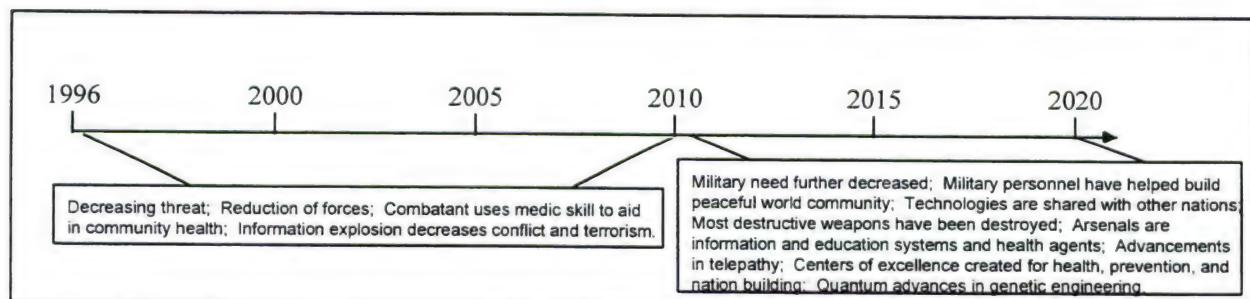
### Combatant(s)



**2020:** Increasingly combatants were volunteers for national service. The Armed Forces were a very small component of the larger National Service Organization. Recognition for the need to improve communities, our nation, and the world motivated masses of youth to become involved in helping arts including health, education, arts, environment, self mastery, communication, conflict resolution, etc. The volunteers spread their skills via hands on help and via the cyberspace to help create a sustainable Earth.

### *The Transformation Timeline*

This timeline illustrates the participant's view of the future in the Transformation.



### Spatial Dimensions of Combat



**1996-2010:** The information explosion resulted in the dissemination of health and wealth. This decreased conflict,

terrorism, and cyberwars. The military was drawn down in the face of decreasing threats and the remaining medical members were assigned to health operations other than war to improve society.

**2011-2020:** The need for the military decreased and the international need for health operations other than war also decreased. Military medical personnel were instrumental in building healthy communities around the world. Technologies developed for use in health operations other than war proliferated and were distributed to other nations.

**2020 and Beyond:** The military is small and people join the National and International Service Organizations based upon the old Peace Corps and Job Corps paradigms. Medical care is now part of self actualization.



## Weapons



**1996-2010:** Rapid advances were made in information technology/encryption along with quantum improvements in education capabilities thus alleviating cyberwarfare and conflicts over education. Terrorist activities and limited regional conflicts were resolved using directed energy weapons such as lasers and microwaves along with psychotropic agents and stun technology. Disease, poverty and natural disasters became the wars. Military structures were slowly transformed into response, research, and planning capabilities. Genetic reengineering created second generation vaccines, life enhancers, replacement cells, immunogenics, and psychotropic agents. These weapons were used in preventing conflicts between the rich and the poor and managing isolated uses of biological warfare.

**2011-2020:** The DoD merged with Health and Human Services to leverage their capabilities to "identify, fight, and prevent" the evolving context of war/conflict. The military academies created linkages with other major universities and built centers of excellence focusing on health, prevention, and nation building as they trained the human weapons systems of the future. Skills/weapons systems of the combatants included linguistics and computer assisted linguistics, technologist skills required to set up mini computer and distance learning centers, health and emergency/disaster mitigating capabilities, and advanced communications/telepathic capabilities. Computer assisted community building skills were used to advantage in health operations other than war. Advanced crowd control systems were used

to quell small insurrections. Quantum advances in genetic engineering led to development of designer vaccines and immunogenics that were used to combat global and localized epidemics.

**2020:** Almost all wound inflicting and destructive weapons have been destroyed as conflict resolution methods have been perfected. Cyber "fail-safe" systems have also been perfected. Small scattered arsenals of wound inflicting and crowd control weapons are found in museums, in rural areas, and in eco-parks. Warfare is recognized as disease or the withholding of information or education; thus, the arsenals are advanced information/educational systems and health agents such as immunizations, rapidly acting immunogenic drugs, rapid water purification systems, and mini irradiating and food preservation systems. Reverse insect pheromones are ultra effective in repelling insect vectors. Genetically reengineered biosystems are used to quell sporadic disease outbreaks and enhance the health of the masses. Conflict resolution is optimized by use of telepathy, advanced spiritual communications, coupled with focused relaxing, and consciousness capabilities transfer. Advances in telepathy allow for distance communication. Very inexpensive ultra light weight communication and learning centers are accessible world-wide.



## Control of Military Forces



**1996-2010:** A slow evolution from the traditional systems resulted in shifting the control to international teams and UN type structures. With the quelling of violence and rapid downsizing of the military, leaders were increasingly selected from industry and government. Mid level leadership was developed in the guard and reserves.

**2010-2020:** The evolution toward national and international service fostered development of leaders who were recognized for service on regional and international teams. They became the points of leadership and control for operations. A loosely confederated guard/reserve type structure, somewhat like the peace corps, provided umbrella control for assigning and contacting the citizens for operations. Control was facilitated by the quantum advances in information technology.

**2020:** Control has evolved to teaming and empowerment. The military is a more peace corps type structure with leadership appointed by international panelists from the UN. Citizen soldiers and a militia of national guard and reservists provide the focus for leadership development. The main function of the military is in operations other than war and control is directed out of the international UN structure through the appointed leaders. Non-government

organizations and other organizations cooperate with the military thus, control has a team like orientation. Communication and telepathic advances make doing the right thing rather straight forward. Thus, the need to maintain rigid control structures is minimized.



## Combatant(s)



**2020:** Combatants are missionaries from growing healthy communities who come into the services with many helping skills, and are then given even more training to prepare them to disseminate growth and caring across the global expanse, and out to space stations and cyberspace. The military academies are the centers of excellence for preparing the world wide care and help givers that are skilled in cyberspace technologies and practical inexpensive methods for creating health, wealth, and competencies. Their graduates have special skills in systems thinking, visualization, and modeling so they can rapidly manage complex situations and foster balance and sustainability in the ecosystems in which they work. This fosters perpetual societies and environments.



### 5.1.3 US Health Systems

The US Health Systems group addressed issues affected by changing insurance systems, increasing cost of health care, the wellness movement, and other contingencies driven by the four scenarios. The following sections explore by scenario the future of US Health Systems from seven view points: Delivery of System Focus, Paradigm Shifts from Information Technology, Structure and Finance, Demographic

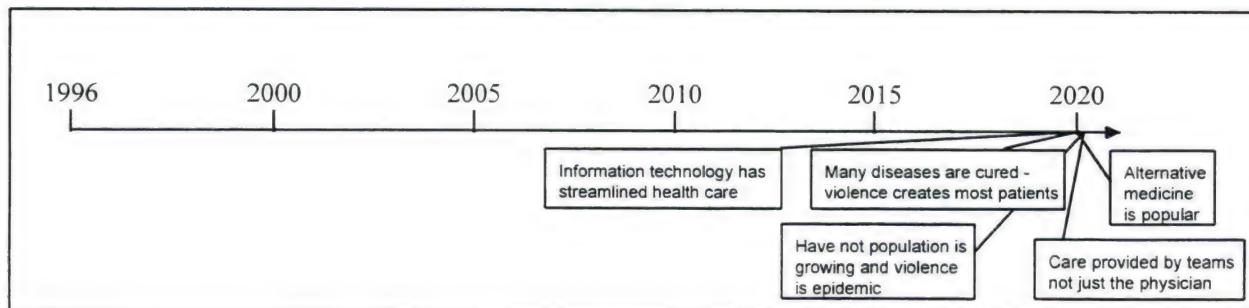
#### TOPIC AREAS

- ◆ Delivery of System Focus
- ◆ Paradigm Shifts from Information Technology
- ◆ Structure and Finance
- ◆ Demographic Impacts
- ◆ Role Changes
- ◆ Environmental Changes
- ◆ Biotechnology

Impacts, Role Changes, Environmental Changes, and Biotechnology.

## The Third Wave Timeline

The following timeline illustrates the participant's view of the future in the Third Wave.



### Delivery of System Focus

Medical Training and Health Care Delivery in 2020. The



**Apprenticeship model:** It has taken two decades of debate and reorganization but by the year 2020 the importance of Apprenticeship has been accepted. The medical training system of the 1990s relied on prolonged lecture courses for instruction and continuing medical education (CME). It has all but disappeared. Medical training is recognized and supported as a life long endeavor with close and continuous electronic contact between colleagues.

When an individual chooses a health care profession, they are assigned to a series of Medical Journeymen or Masters in different clinical areas. The apprentice works in a number of acute care hospitals, county clinics, rural communities, nursing homes, rehabilitation centers, nurseries, sports centers and grammar schools. They learn the art of medicine from their mentors and patients, while they learn the fundamentals of mental health, anatomy, biochemistry and physiology from self-directed networked multimedia programs. At first the apprentices function in close physical proximity to their teachers at the regional health care centers. However, as they demonstrate increasing competence at simple tasks, they are allowed to work in more remote locations, still in close electronic/video communication with their teachers. Apprentices learn from each other's experiences through computer based video conferencing. This approach has drastically reduced the cost of training basic health care workers and provided a National Medical Service Core. This basic introduction to Health and Medicine takes two years. The computer based curriculum that an individual uses is

standardized and is chosen from best programs created by Universities throughout the United States.

After the basic two year course, the students are designated General Health Workers. They remain part of the electronic web for continuing education. They serve as the triage mechanism for the majority of citizens in the US who require help beyond the on-line databases and electronic consultations that comprise over 70% of medical activity. These General Health Workers are based at neighborhood care centers where they are an integral part of a neighborhood care team that provides spiritual and physical help.

The Medical Cybrarians, Subspecialist Physicians and Surgeons are few in number. These more highly trained individuals are drawn from the pool of General Health Workers and are eligible for further training after one year of work in the community. Close scrutiny of their performance on the job has improved the process for accepting the most appropriate candidates for advanced training.

Continuing medical education and patient outcomes are tied together by the electronic patient record. All medical sources that are used in the care of a patient are automatically linked to the electronic medical record. The skills and abilities of the health care workers are therefore monitored providing constant feedback to the health professionals so that weak areas of performance can be bolstered rapidly.



## Paradigm Shifts from Information Technology



**The Citizen and Health Care in 2020:** The key technology that changed the focus of medicine in 2020 is the electronic medical record. World wide standards for its creation, maintenance, and electronic transport were adopted by the federal government in 2005. All medical information now conforms to DICOM-XX and HL-7 and can be used on open architecture systems. The legal system created effective safeguards to discourage inappropriate access by the government or commercial enterprise. Robust encryption and password protection made it possible to instantly deliver an individual's electronic medical record anywhere around the world safely.

An electronic medical record is started at birth for each citizen. Access to the record is controlled by the family until the patient is legally an adult. From that point on, access to that record by the medical system or private enterprise is granted only by the individual. The government retains access to the generic data (no personal identifiers) so that the Center For Disease Control can create the US Health Databases that guide our lives. Although, the citizen is identified by general location and other key demographics, there can be no individual identification. The citizens of the US have full control of the electronic medical record without concern for electronic tampering or legal coercion. This is an important concept because this safeguard prevents this scenario from moving to the Dark side.

The electronic medical record has not only empowered the individual but has also been the catalyst for a number of conceptual changes.

1. Preventive care is the focus of Medicine in 2020.
  - Data derived from the electronic medical record over the prior ten years has demonstrated the effect of lifestyle and environment on longevity and quality of life. The use of this information has been integrated into the school curriculum so that students learn very quickly how to integrate changing health information into their daily lives.
2. Individual citizens are the focus of medical decision making.
  - Depending on age, mental, and physical capabilities, US citizens can draw on a wealth of information and health care professionals from their home. A combination of light wave technology computers and intelligent software agents can search the world's medical databases in seconds. For the majority of the population these intelligent multimedia databases provide expert guidance.
  - Medical Cybrarians (electronically accessed librarians) are available to focus and improve the search process if direct manipulation of the database is not fruitful.

- Physician's assistants and family practitioners are available via video conference links to the home so the patient can discuss their physical and mental concerns. Sub-specialists are also available both to the patient and general practitioner as deemed appropriate.
- 3. The home is the focus of medical care.
  - Over 80% of Americans, have high bandwidth access to the medical information network. Multimedia communication terminals are no more expensive than 1996 era television sets. In addition, there are subsidies available from the local governments to encourage the installation of MCTs in all homes and apartments since it has been shown to promote improved health on a national basis. The same terminals or kiosks are also available in public libraries, places of worship and schools.
  - Equipment to provide vital signs (blood pressure, pulse, oxygen saturation) at home has been available for ten years. These vital sign modules are easily attached to the multimedia communication terminal for transmission of the information. The health-screen toilet detects metabolic changes and alerts the citizen to significant changes in blood sugar, important metabolites or changes in therapeutic drug levels. It also screens for the presence of blood in the stool and urine. Basic imaging devices can interface with the multimedia communication terminal. They are used by the patient and their family at home. Magnetic resonance images use the earth's magnetic field so that only radio probes are needed to create magnetic resonance images in the home. The creation of the images is directed via video conference link with health care practitioners and interpreted at a distance. The patient is then advised based on the acuity of the medical problem.
  - Individuals who are not connected at home can become a member of a neighborhood care center. Here they can get help with self monitoring, arrange a video conference with a General Health Worker, or make arrangements to receive assisted living services such as helping with meals or doing chores around the house.

4. Evidence based medicine has become a reality.

- The center for disease control studies therapeutic outcomes from concepts as simple as the effect of exercise on longevity to identifying the best protocol for the treatment of lymphoma in children.
- The computing power of the center for disease control is so great that outcomes of lifestyle decisions (exercise, food, smoking, hobbies, etc.), and therapeutic treatment is updated for all Americans continuously leading to powerful algorithms derived from information in the electronic medical record. Citizens have access to data that can help guide their decisions.



## Structure and Finance



The health care economy remains constrained, but the balance between reducing costs through efficient management and improving the process of care has been able to counter the increased cost imposed by new technology. Because of a backlash against high profits being exploited from health care and the perceptions of the people that health care should be a right not just a privilege, legislation was passed to limit exorbitant profits. As a result, most health care is now privately administered by efficient, not-for-profit managed care providers and government programs. This has also markedly improved access.



## Demographic Impacts



The population is older in America with longevity extended into the late 80's. The affluent have a zero population growth whereas the poorer, less educated continue to expand via higher birth rates and through immigration. The schism between the rich and poor has widened and violence among the poorer segments of the population has escalated to epidemic proportions. Information now creates wealth and only the upper 30% of the population have ready access to information.



## Role Changes



The care of patients is very different from in the 1990s.

Hierarchical medicine has been replaced by collaborative teams of care providers. In the mid-90s it became clear that no one individual had the knowledge and skill to provide optimal care. As computer decision support tools became available, alternate care providers became more practical. Physicians still remain the team leaders, but many of their previously exclusive activities are now delegated to others. The focus is now on communications between team members, patients, and families and on standardized and efficient care that has become much more important than hierarchy and turf.



## Environmental Changes



Fortunately, in America, the pollution hazards created by the expanding population have been effectively addressed. Air, water, and soil are much cleaner. Natural disasters are frequent; but, through better use of military capabilities and telecommunication, most are handled efficiently. Unfortunately, new highly virulent drug resistant micro-organisms still plague the society. This, along with increasing violence from social unrest compromise the majority of hospital admissions.



## Biotechnology

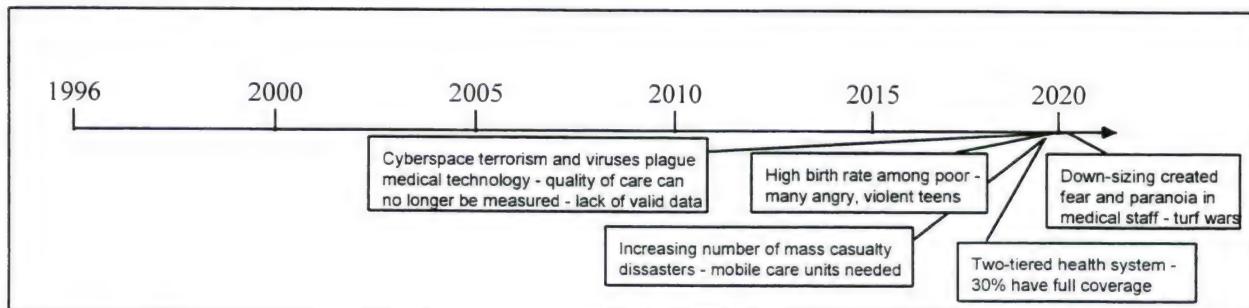


Through the innovation of Biotechnology, many diseases which plagued us in the 1990s are controllable or cured.

Hypertension and diabetes and their complications are now minor problems. Seventy percent of cancers are now curable. Almost all surgical procedures are now minimally invasive or non-invasive and even neurosurgery and open heart surgery patients are cared for on regular nursing units or as outpatients. Invasive monitoring is a thing of the past. Critical care is primarily composed of overwhelming infections and trauma. On the downside, the new technology has made designer drugs easy to produce resulting in an escalation of drug addiction and untoward events.

## The Dark Side Timeline

The following timeline illustrates the participant's view of the future in the Dark Side.



### Delivery of System Focus



For-profit health care systems flourish among the rich and have continued to avoid the under privileged through their influence on Congress and businesses, and via legal loopholes. They offer everything for a price which brings them good profits.

The poor are cared for by inadequately funded not-for-profit and governmental organizations who must ration the high-tech care and offer a basic package that is inadequate to meet even the basic needs of everyone. America has clearly accepted a two-tiered health care delivery system. In desperation many have turned to alternative medicine and self care. This has also increased vulnerability to charlatans and unethical practice.

Mass casualty events from natural, environmental, and terrorist created disasters are much more common and have produced a need for rapidly deployable mobile units to care for ever increasing mass casualties situations.



### Paradigm Shifts from Information Technology



Cyberspace terrorism and privacy issues have prevented the power of the Info-technology industry from being fully realized in medicine. The electronic medical record is still not fully developed and viruses plague the completeness and quality of the data. Efficiency is reduced, quality decision-making support is impossible, and even a quality database for epidemiologic research is limited. The lack of data

and inaccuracies in the data systems have retarded the development of high quality managed care systems. Analysts struggle to develop programs and care improvement processes because they cannot measure outcomes and progress. It is impossible to measure the quality of care provided by health care systems due to the lack of credible information, and the identification of unsafe and/or fraudulent practice is hopeless. Some have taken advantage of this predicament for personal gain at the expense of patients and third party payers.



## Structure and Finance



The gap between the wealthy and poor has created huge financial problems in health care. Only 30% can afford the premium for full coverage delivered by the mega system of for-profit providers. The poor have expanded the roles of Medicare, Medicaid, and other governmental programs which are required to severely constrain services and ration care. Waiting time for non-emergent services is long. Both high quality care and new technology are available only to the wealthy.



## Demographic Impacts



Due to high birth rates among the poor and poorly controlled immigration, the urban cities have a high proportion of young persons who have poor education, strong emotions, and rigid opinions based on ethnic/religious beliefs and gang standards. They are angry and violent. The upper echelons of society continue to accumulate wealth, lead enviable lifestyles, and look down upon the poor.



## Role Changes



The practice of medicine is dictated by administrators who try to control expenditures because of budgetary constraints or to increase profits to share holders. Hierarchical decision-making is rigid and designed to control the behavior of providers. Even patient choices are narrowed in the poorer population sector. Downsizing has created fear and paranoia which creates turf battles and reinforces hierarchy, regulation, and controlling attitudes.



## Environmental Changes



Pollution and high risk health behavior, including smoking, drinking, and drugs, are rampant among the poor. Interracial violence in this group is epidemic and terrorism based on religious, ethnic, and economic reasons is common. Virulent, therapy resistant infections spread quickly among the poor. Preventative programs are poor due to lack of funding.



## Biotechnology

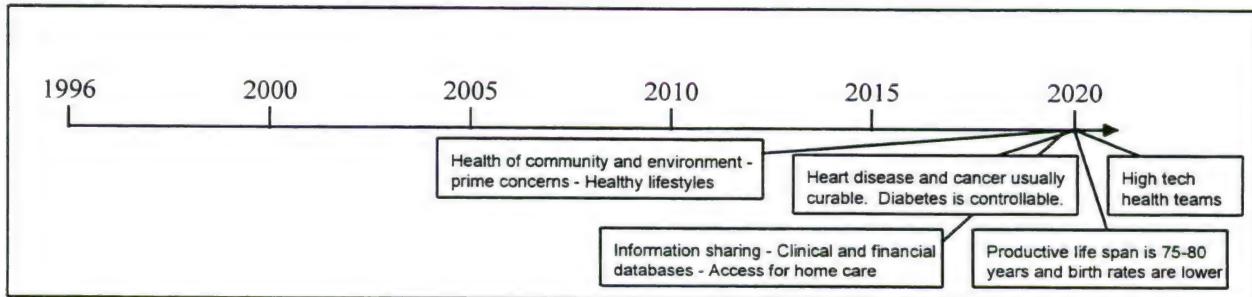


For the wealthy, high tech drugs, devices, and procedures, including transplantation and artificial organs, are available.

Hypertension, diabetes, and their side effects are controllable. Heart disease and cancer are usually curable. Even severe infections have a much improved prognosis with the use of very expensive high tech drugs. Unfortunately, for 70% of the population much of this therapy is rationed or not offered at all.

## Global Mind Change Timeline

The following timeline illustrates the participant's view of the future in the Global Mind Change.



## Delivery of System Focus



Diagnosis and therapy are made by teams of providers using sophisticated high tech physiologic sensors and chemical analysis. Computers integrate multiple disease states and the use of genetic, biochemical, immune, environmental, and physiologic information to customize care by a complex set of rules has

been perfected. Most care is delivered by the patients themselves or family. Surgical and other invasive procedures are carried out by technicians and physicians.



## Paradigm Shifts from Information Technology



With the reducing threat of cyber war and misuse of information, the mind change of sharing information and using it to create better communities expanded its usefulness on a scale similar to the high tech information breakthroughs. Scientists and care providers were able to use the health care clinical and financial databases to make giant strides in improving the process of care and creating efficiencies. Many of these concepts could be accessed from home for self care. Alternative care could be easily evaluated by outcomes and incorporated appropriately into main stream medicine.



## Structure and Finance and Demographic Impacts



As the Global Mind shifted towards economy of resources and personal responsibility for self and community, health care had a similar mind shift. The good of the community's health took priority over financial profits. Efficiencies were created by organizing health care delivery at the local level and making the local community responsible financially. The mega, for-profit corporations were broken down. Cooperation between providers at the local level created a collaborative effort to efficiently improve the health of the community using local, industrial, governmental, and philanthropic resources.



## Role Changes



The role of health care providers and their education changed dramatically. Hospital care was reduced by 80%. The remaining 20% was carried out exclusively by hospital-based personnel, including the physicians. Most care was in the home and outpatient setting, including 90% of surgery. Nurses, pharmacists, and physicians cared for most outpatients remotely, accessing their electronic medical records, and using remote physiologic sensors built into the patient's home communications or entertainment centers. Home visits were performed for those not able to provide complete self

care. Providers, including alternative practitioners, as appropriate, collaborated on care in an interactive, non-treating environment.



## Environmental Changes



Health care helped drive environmental changes from reduction in pollution and violence, to healthy lifestyle changes. It became a major driver for community decisions about transportation, housing development, recreational planning and business expansion. Educational standards, spiritual enlargement, and social programs became fundamentals in health care.



## Biotechnology

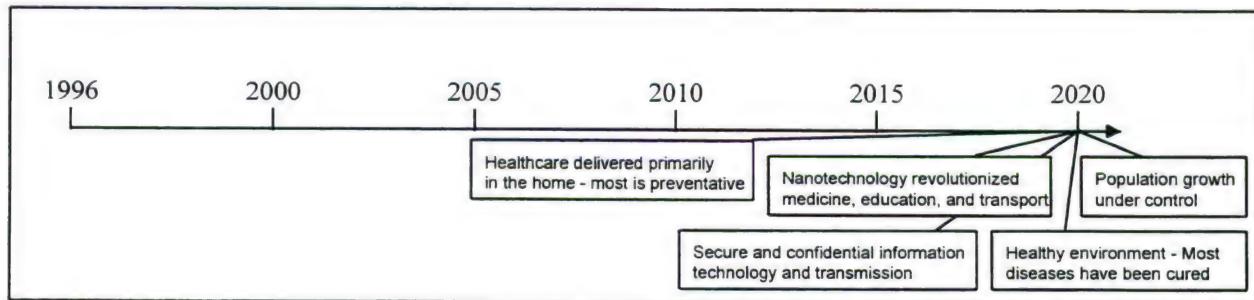


Most Americans, high tech drugs, devices and procedures including transplantation and artificial organs, are available.

Hypertension, diabetes and their side effects are controllable. Heart disease and cancer is usually curable. Even severe infections have a much improved prognosis with the use of very expensive high tech drugs.

## *The Transformation Timeline*

The following timeline illustrates the participant's view of the future in the Transformation.



## Delivery of System Focus



Health care, which is delivered primarily in the home, is

almost all preventative in nature. Personal responsibility for a healthy lifestyle is the norm. Hospitals consist of only critical care medicine beds for a few devastating, unpredictable illnesses. Most care is delivered via tele-medicine in the home with the care deliverer being the patient, a family member, or occasionally, the home health nurse. Sophisticated monitoring and consultation is easily done remotely.



### Paradigm Shifts from Information Technology



New breakthroughs in data compression, stability, transmission and retrieval have made medical information securable, confidential, and easily accessible for legitimate uses.



### Structure and Finance



Major breakthroughs in creating low cost energy along with superconductivity and nano-technology have revolutionized transportation, the electronic industry, and agriculture creating prosperity at all levels. This in turn has improved the level of education, access to information, and the amount of leisure time available for other things. Medicine has profited from this enormous and universal access, increased affordability and strong research support which is now available.



### Demographic Impacts



The world population growth is now under control. Many borders have been eliminated and language barriers are a thing of the past. People can easily communicate in any language. Small implantable devices using voice recognition sensors, interpret and convert language "on the fly." The economic strides have reduced fears between nations and peoples. Communication and transportation breakthroughs have reduced urbanization and the population has migrated to smaller communities.



### Role Changes



The patient is very educated and has been integrated fully into the health care team. Most emphasis is on wellness and

improving quality of life. Competitive care providers of the past now work together to improve the health of the community and complement one another's effort. Profiteering on illness is no longer observed. There is full integration of physicians, nurses, technicians, administrators and alternative care providers into a harmonious effort to support the community and the individual. End of life situations are accepted and patients elect to choose compassionate, dignified deaths, usually at home.



## Environmental Changes

Without serious pollution and with successful healthy lifestyle programs, many illnesses and injuries have been prevented.



Improvements in education and poverty have reduced violence and even terrorism, which was feared so much around the turn of the century. New vaccines and methods for infectious disease control have been pioneered and infections have been prevented.



## Biotechnology



The expansion of Biotechnology has been explosive. Superconductivity, cheap energy, and nano-technology have made new technology available that was previously unimaginable. Most chronic diseases have been prevented through genetic breakthroughs. Disease has been cured or totally controlled. All surgery is performed non-invasively. The immune system can be regulated. Rapid healing of wounds in hours is now an everyday occurrence. Mental illness is controlled and we have learned to control violent and antisocial behavior. Accelerated learning and enhanced performance is also easily achievable.

## 5.2 Military Health Environments

This area discusses three work group elements: Warzone Medicine, Health Operations Other Than War, and Health Systems for Military.



### 5.2.1 Warzone Medicine

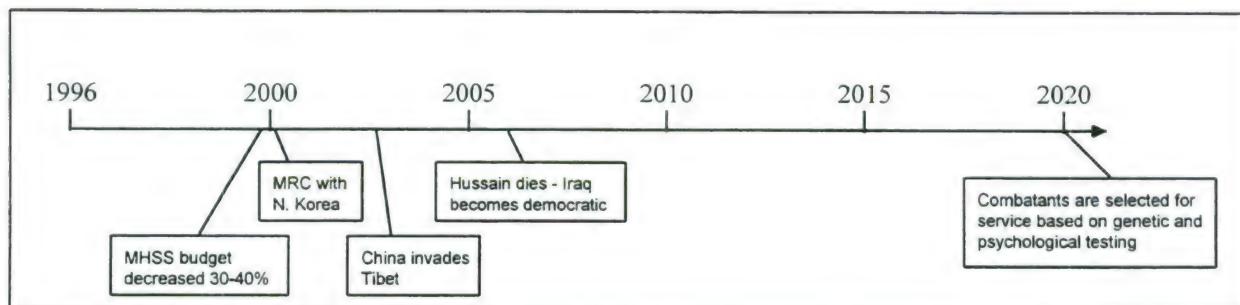
The Warzone Medicine group addressed the battlefield and threat issues impacted by changing political, technological, and economic environments.

#### TOPIC AREAS

- ◆ Medical Responses to Evolving Warfare
- ◆ Key Breakthroughs
- ◆ Rapid Expansion of Capabilities
- ◆ Threats (Different Enemies)

#### *The Third Wave Timeline*

The following timeline illustrates the participant's view of the future in the Third Wave.



### Medical Responses to Evolving Warfare



Assumptions: One major regional conflict, before the year 2000, involved North Korea and China invading South Korea. China invaded Tibet and India became involved; the Chinese expansionism and economic forces accelerated the coalition of Japan, the US, and Canada into the Pacific bloc. The Euro bloc, with European countries and the former Soviet Union, united to meet the threat of Chinese expansionism. Peace initiatives in the Middle East and democratization of Gulf state governments including Bahrain, Kuwait, Qatar, and the United Arab Emirates (U.A.E.) decreased the threat of Islamic fundamentalist revolution. Saddam Hussein died and Iraq formed a democratic government.

By 2000, the MHSS budget and manpower decreased from 1996 levels by 30-40%. Quality and process improvement principles were applied to gain a 30% improvement in effectiveness and efficiency. Technology was used to leverage capabilities so that despite resource constraints there were increased medical capabilities.



## Key Breakthroughs



A cyberforce developed out of the present Services. A foreign policy of nonintervention was accepted and pursued avoiding benevolent global hegemony. Medical readiness capabilities were defined and medical force size based on this foreign policy. A joint medical command was established using a Special Operations model. New personal protective technology was developed. The combat health support information system matured to allow effective transmission of health information from the individual soldier to the source of care. The level of care paradigm changed to a combat health capability's paradigm. Military medicine focused on fitness of the force, forecasting, preventing and managing injuries and disease.



## Rapid Expansion of Capabilities



New rapid response draft required all citizens to perform national service either in the military reserves or peace corps equivalent. Reserve forces were successfully reengineered to match the needs of the active forces.



## Threats (Different Enemies)

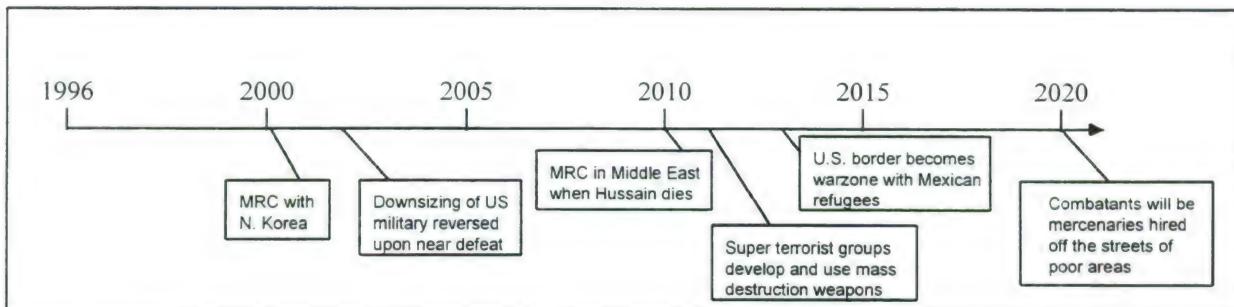


Offensive cyberweapons included electromagnetic bombs, magnetic weapon systems (the nuclear weapons of the Information Age), and home brew 100-megawatt weapons. Political constraints restricted the usability of ground troops. Money and resources shifted to forces that were based on our low tolerance of casualties. The casualty exposure index was adjusted for proximity of different forces (a crude one would be number of personnel in the close combat echelons). This index was also used to tailor the combat health support resources and capabilities for each force. An armor brigade, for example, had a lower index than light infantry or Marine brigade. Capital intensive forces, with the lowest possible exposure to casualties, were developed because of the few threats that justified substantial American casualties. There were no new great threats. China, after the war, gradually became more democratic and responsible in its behavior. Credible 2020 threats

include: numerous limited regional conflicts; increase in international terrorism; cyberwar; and limited proliferation of the weapons of mass destruction.

## ***The Dark Side Timeline***

The following timeline illustrates the participant's view of the future in the Dark Side.



### **Medical Responses to Evolving Warfare**



Assumptions: The first major regional conflict was triggered by a North Korean invasion of South Korea around the year 2000. The

US forces were initially almost defeated and therefore the previous downsizing trend was reversed. The second major regional conflict occurred in the year 2010 in the Middle East after the death of Saddam Hussein and assumption of power in Bahrain by a Shi'ite authoritarian government. It united a coalition of Islamic fundamentalist states including Bahrain/Iraq/Syria/Iran/Afghanistan/Pakistan who invaded Kuwait and Qatar. Super terrorist groups including heavily armed militias, terrorist cells, and zealous cults developed and used weapons of mass destruction. The southern US border became a warzone with millions of Mexican refugees seeking asylum from a Mexican civil war between a corrupt right-wing regime in power and leftist guerrillas.

The MHSS manpower and budget decreased from 1996 levels by 30-40%. Medical response capabilities were decremented because of bureaucratic resistance to the application of quality and process improvement principals. Emphasis on technology to solve problems led to the development of equipment that did not effectively support battle field medicine.



### **Key Breakthroughs**



Technology was not effectively focused. This led to the development of technological dinosaurs.



## Rapid Expansion of Capabilities

Capabilities remained limited because of continued resource constraints and lack of effective reengineering of reserve forces.



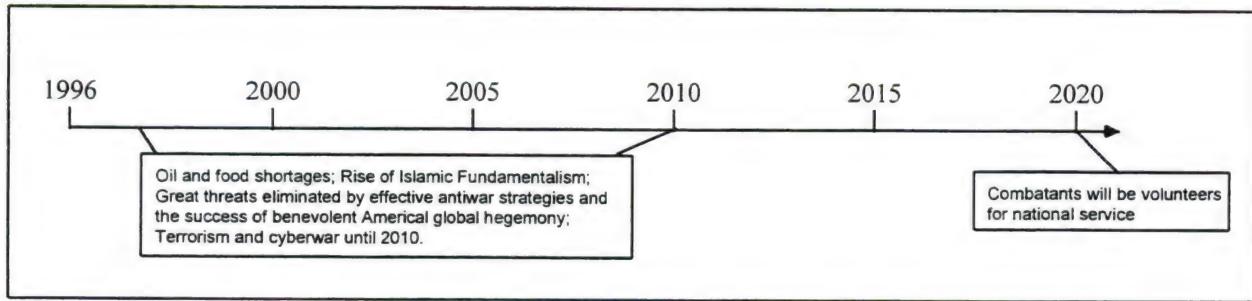
## Threats (Different Enemies)



Readiness decline continued. There were global pandemics in exploding cities. There were many environmental refugees, sinking nations, and global teen gangs. The lack of development in the US increased the gap between the rich and poor. There were many outbursts of violence. There was a resurgence of Communism within the former Soviet Union with the Chinese expansionism. There was hegemony among the Indians. A rise of conflicting fundamentalist movements occurred. There was widespread use of chemical and biological weapons. Threats of international terrorism were great. Superterrorism was rampant. Armed forces expanded to 1.5 million as a shield against growing global chaos and violence. The expanded military was employed in border actions and as a national uniformed police force. Biologic weapons became the preferred weapons for terrorists.

## Global Mind Change Timeline

This timeline illustrates the participant's view of the future in the Global Mind Change.



## Medical Responses to Evolving Warfare



Assumptions: There were only operations other than war. The MHSS budget and manpower decreased by 40-50% from 1996 levels. The operations other than war response capabilities actually increased.



## Key Breakthroughs



There were global town meetings. There was a new idealism with a cross cultural world view. Rapid technological progress with environmentally advanced technologies was realized. There was increased telehealth funding and critical readiness capabilities were maximized by technology and reengineering. Preventive medicine and robust self and buddy aid were a critical part of every military unit.

Warriors received basic and advanced training. Technology developed effective hemostatic field bandages, airway maintenance, and intravenous access devices that were simple to use. New oxygen carrying fluid was available for front line use. New rapid evacuation platforms allowed rapid transport to operating room capability and resuscitative surgery. Effective biologic and chemical countermeasures were available for self and buddy use. Class VIII (medical class of supplies) were maintained by point-of-use delivery. The theater medical information system was integrated with the tactical information system allowing complete real time integration and synchronization of the combat health support with the scheme of maneuver.



## Rapid Expansion of Capabilities



Antiwar capabilities focused on International rescue missions.



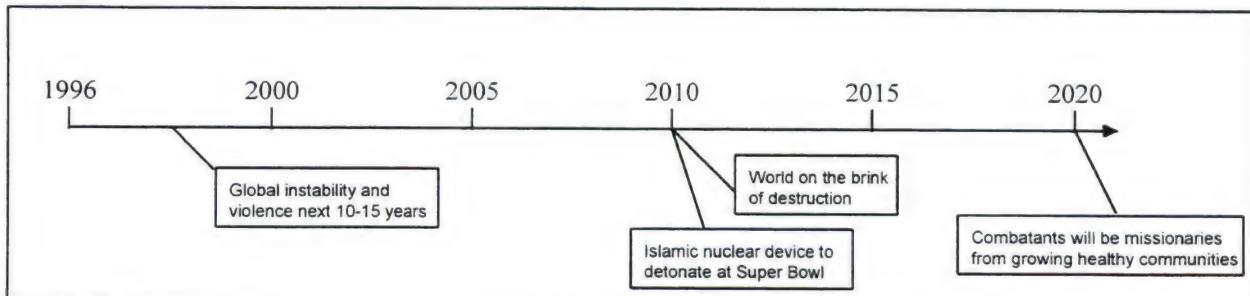
## Threats (Different Enemies)



There were oil and food shortages. A rise of Islamic fundamentalism occurred. Great threats were eliminated by effective antiwar strategies and the success of benevolent nations. There was terrorism and cyberwar until 2010.

## ***The Transformation Timeline***

The following timeline illustrates the participant's view of the future in the Transformation.



### **Medical Responses to Evolving Warfare**



Assumptions: Mode of medical operations centered on global disease and conflict monitoring. All MHSS resources were redirected to the forecasting, preventing, and intervening in global conflict and diseases. All of the world's population benefited.



### **Key Breakthroughs**



The nanotechnology study of the most indispensable agent of basic war, the WARRIOR, gave insight into violence and improved our psychological preparations for war. The psychoneurobiologic basis of violence was discovered and led to violence control capabilities.



### **Rapid Expansion of Capabilities**



Military health teams and emergency medical response teams were available for global deployment to high risk areas.



### **Threats (Different Enemies)**



There was the potential for unrestrained aggression from poor young males. Ethnic groups within nations, terrorist and other gangs within nations, and multinational corporations, including drug cartels that cross borders US, declined. Kitchen-table weapons of mass destruction including nuclear, chemical and biological weapons abounded. Alliances of rogue nations (previously our friends) developed niche weapons and countermeasures that neutralized our technology advantages. Alliances of rogue

nations with nuclear capabilities (Korea, Iran & Pakistan) posed a significant threat. Sub state battles involving non-government organizations were common. The world saw the use of nuclear weapons before the year 2020. In this scenario, a major crisis brought the world to the brink of destruction in the year 2010. The stage for this crisis was set by the acceleration of global instability and violence for the previous 10-15 years. This crisis motivated "The Transformation."

Major regional conflicts in Korea and South West Asia were avoided and the US defense budget continued to shrink. Islamic fundamentalist terrorists obtained a nuclear device and detonated it at the site of the 2010 Super Bowl with a major loss of life. The US retaliated with a nuclear missile to Tehran. Iran retaliated with a nuclear missile to Tel Aviv. After much destruction and loss of life, a global forum on human violence and war was initiated. This forum included the superpower nation states, heads of all the major world religions, heads of major corporations, and experts in the psychoneurobiology of violence. After 2-5 years this forum developed a global consciousness. They had a vision of our beautiful planet as a whole entity, with all individuals as members of one family living in homeostatic balance with the biosphere. An international legislative body was established whose decisions were invoked and found binding in every dispute. A global defense force was formed and all nation state forces were disbanded.



### 5.2.2 Health Operations Other Than War (HOOTW)

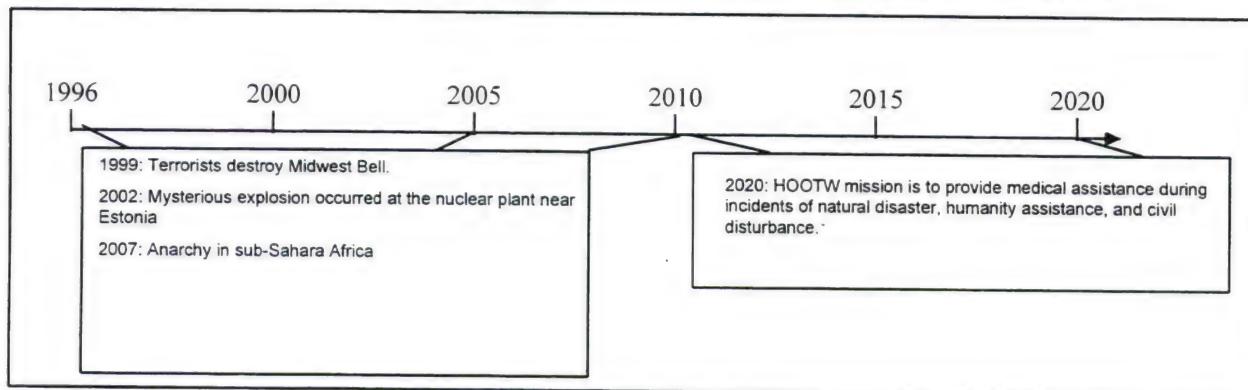
The health operations other than war addressed peacetime healthcare, research and development, transformation of America, personal awareness, and other issues driven by the four scenarios studied.

#### TOPIC AREAS

- ◆ Major Services Provided
- ◆ Leadership
- ◆ Building Sustainable Nations
- ◆ Infrastructure

## The Third Wave Timeline

The following timeline illustrates the participant's view of the future in the Third Wave.



### Major Services Provided



The broad mission of health operations other than war in the year 2020 is to provide medical assistance during incidents of natural disasters, calls for humanitarian assistance, incidents of civil disturbance, and calls for peacekeeping and peace enforcement. The response called for is prevention of, reaction to, and/or recovery from, such events. Since the economic and social climate in the US has stabilized in the Third Wave, US-based health operations other than war activities are primarily needed for natural disasters; however, occasionally, assistance for civil disturbance is necessary (sports fans still tend to be overly enthusiastic). Worldwide, the US health operations other than war response ranges from assistance after natural disasters to assistance during and after regional conflicts.

The specific mission of health operations other than war is to provide emergency and interceptive services to US and other operations other than war reactive forces (military and civilian) and incident victims. Services include trauma care, evacuation, hospitalization, preventive medicine, pharmacy services, environmental assessment, mental health counseling, dental care, veterinary care, and, only for extended deployments, primary care.

There is a health operations other than war team assigned to each operations other than war force under a Unified Command. Each health operations other than war team is structured for a varied level of response depending upon the nature and size of the summoning event. A complete team is composed of personnel and equipment to provide comprehensive services. The team has a rapid response time component (Level 1 Response) that is called

immediately when the need arises; response is no more than four hours for most regions of the world. This team delivers emergency medical services to prevent loss of life and limb. The follow-on team (Level 2 Response) responds within 24-48 hours and provides expanded emergency care, preventive medicine, sanitation services, and mental health services. The entire health operations other than war team (Level 3 Response) is called if the deployment will be sustained for one month or more.

After the immediate disaster or conflict situation is resolved, health operations other than war teams withdraw and local civilian agencies assume the responsibility of restoration.



## Leadership



In 2020 there is a strong internationally-recognized US military organization for operations other than war at the Unified Command level. Background: In 1999 terrorists destroyed Midwest Bell. The entire Midwest had no communications systems. Due to no 911 systems, there was no response to medical emergencies. The entire medical system was incapacitated with a dramatic increase in morbidity and mortality. Martial law was declared and the military was called in to control the situation and provide area communications and medical support. Congress mandated that the military develop a strong communication and control system for operations other than war. In 2002 a suspicious explosion occurred at the nuclear power plant in Estonia resulting in one million casualties. The US military operations other than war capability was mobilized. Congress further mandated that the military expand its operations other than war mission to an outside the continental US mission. US military operations other than war capability became recognized throughout the world as the preeminent force for catastrophic events. In 2007 continental anarchy of un-governed proportions developed in sub-Saharan Africa. US military operations other than war operations lead the international coalition to establish a secure environment for economic and social recovery. This successful mission established the US operations other than war capability as preeminent in the world for all non-war emergency situations.

The current health operations other than war capability includes both military and civilian personnel. Since knowledge, coordination and creativity have become keys to success and since the information superhighway can now be accessed from a wristwatch, local, regional, civilian federal and military agencies can immediately and effectively respond to any disaster or disturbance. Bickering and territorialism between responsible agencies are no longer factors.

For incidents in the US, a civilian agency is the initial responder. Smaller incidents are managed by local and regional agencies (local medical teams and local police forces, supplemented by small military units if needed). These agencies can expect an immediate and efficient response from civilian federal (an evolved FEMA) and military agencies at the push of a wrist watch button. For incidents in other nations, the US military operations other than war and health operations other than war are frequently called upon for assistance. For large non-conflict disasters such as earthquakes or hurricanes, civilian agencies may also respond overseas.

FEMA (federal civilian) and health operations other than war (military) are separate but coordinated agencies. FEMA does not respond during military conflicts, but health operations other than war may be called upon to support relief efforts of a purely civilian nature. In the US, FEMA is in control; overseas, health operations other than war is in control. Training for FEMA and health operations other than war personnel is similar and often conducted at the same facility (an evolved Uniformed Services University of Health Sciences with more emphasis on trauma and emergency services; perhaps a new specialty called "disaster relief services" with training in areas such as trauma and emergency care, tropical medicine and infectious diseases, and hygiene and nutrition). After the training, both civilian and military providers (i.e., MDs, DDSs, RNs, PAs, mental health specialists) have compulsory service under either FEMA or the military services in a health operations other than war capacity. In addition, professional schools such as medical and nursing schools have added courses and clinical rotations in "disaster relief services" to their curricula so many trained professionals are available as volunteers when needed. Basic equipment for FEMA and health operations other than war is also similar and co-developed; however, health operations other than war has more mobile and sustainable assets since they may be utilized in remote regions of the world, perhaps under hostile conditions.



## Building Sustainable Nations



In 2020, third-world nations are beginning to prosper economically and socially; therefore, the need to build "sustainable nations" is less critical. However, operations other than war and health operations other than war humanitarian assistance and assistance during limited regional conflicts (peace making and peace keeping) are periodically needed. During these missions, operations other than war teams work with government officials and health operations other than war personnel become trainers of local medical professionals to improve the delivery of medical services to the local

population in a sustained manner. This training covers basic techniques such as handwashing, sterility, non-reuse of needles, appropriate use of antibiotics, surgical procedures, dental procedures, disease prevention, and sanitation.



## Infrastructure

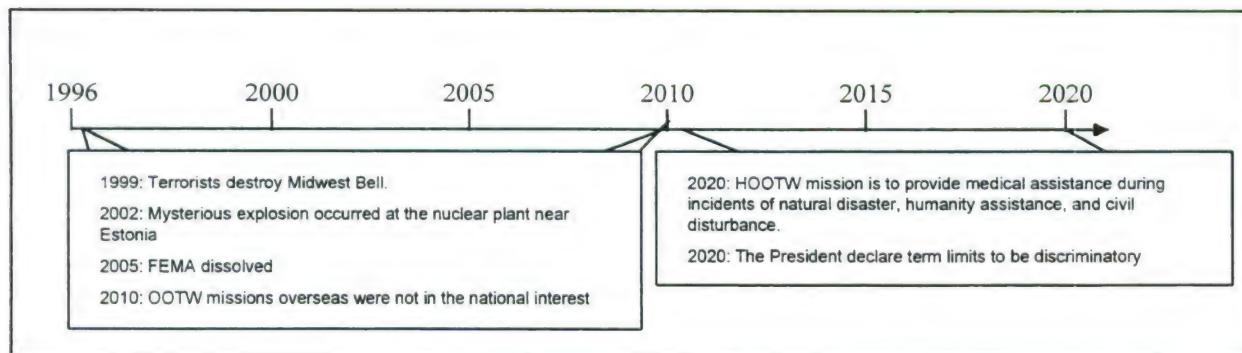


The technology available in the information society is readily available to the health operations other than war effort. In the US, all people, structures and land areas have personal monitors, allowing central facilities to detect and assess natural disasters and medical emergencies as they are occurring. The equipment and supplies required for the Level 1 Response have been miniaturized so one squad of two people can carry all the equipment and supplies needed for immediate emergency assistance. A hybrid between a jet and a helicopter (jetopter) has been developed. The jetopter travels at supersonic speed and can land at very remote and rugged sites. This allows rapid delivery of the Level 2 and 3 Responses to all areas of the earth. health operations other than war jetopters are fitted with all equipment and supplies necessary for emergency surgery through primary care. Full service is available immediately after a jetopter lands.

Communications are facilitated by wrist watch access to the information superhighway. The watch has audio capability through nanotechnology speakers and video capability through a projected hologram. Fiber optic lines have replaced copper lines. All information is transmitted via secure satellite connections. Each private, commercial and government building has a receiver.

## *The Dark Side Timeline*

The following timeline illustrates the participant's view of the Dark Side.





## Major Services Provided



The broad mission of health operations other than war in the year 2020 is to provide medical assistance during incidents of natural disasters, calls for humanitarian assistance, incidents of civil disturbance, and calls for peacekeeping and peace enforcement. The response is for prevention of, reaction to, and/or recovery from, such events. Since the economic and social climate in the US is in disarray, US-based health operations other than war activities are frequently needed for natural disasters, civil disturbance, and terrorist activities. Worldwide, the US health operations other than war response ranges from assistance after natural disasters to assistance during and after regional conflicts. However, due to the isolationist philosophy of the administration and Congress, the worldwide mission is of lesser importance than the US mission.

The specific 2020 health operations other than war mission is to provide health care to US and other operations other than war reactive forces (military and civilian) and incident victims. Services include trauma care, evacuation, hospitalization, preventive medicine, pharmacy services, environmental assessment, mental health counseling, dental care, veterinary care, and, only for extended deployments, primary care. However, care is primarily focused on the rich who are victims of natural or human-derived disasters; the poor tend to more readily receive care when their condition could impact upon the health and safety of the rich.

There is a health operations other than war team assigned to each major region of the US (North, South Midwest, West). Each health operations other than war team is structured for a varied level of response depending upon the nature and size of the summoning event. The structure and components of the teams are the same as described in the Third Wave with Level 1, 2, 3 Responses.



## Leadership



In 2020 the US health operations other than war capability is primarily a military organization that is active mainly within US borders (FEMA was dissolved in 2005 as the country could not afford two emergency response systems and the military organization was deemed the better response system). Background: In 1999 terrorists destroyed Midwest Bell. The entire Midwest had no communications systems. Due to no 911 systems, there was no response to medical emergencies. Local and regional health operations other than war response teams were incapacitated by infighting and

jurisdictional squabbles. Increased morbidity and mortality resulted. Martial law was declared and the military was called in to control the situation and provide area communication and medical support. Congress mandated that the military develop a strong communications and control system for health operations other than war. In 2002 a suspicious explosion occurred at the nuclear power plant in Estonia with one million casualties. US military operations other than war and health operations other than war were mobilized. During the relief effort, US service members were victims of biological warfare released by a local militant faction of a religious group. Congress immediately called the military back to the US and declared the operations other than war mission to be no longer supportable. Starting in 2010, US military overseas operations other than war missions were declared to not be of national interest, even for catastrophic natural disasters.

In 2020, due to a lack of funding and other priorities, there is no centralized or organized training for health operations other than war skills. Recognizing the need for these skills, professional schools such as medical and nursing schools have added courses and clinical rotations in "disaster relief services" to their curricula so many trained professionals can be available as volunteers. However, such volunteerism is dangerous and therefore rare.



## Building Sustainable Nations



The US President has declared Presidential term limits to be discriminatory. Due to the isolationist policies of the administration, the building of sustainable nations is not considered of national interest. Also, since military operations other than war and health operations other than war missions are rarely conducted outside of US borders, and since they have little long-term stabilizing capability in the US, little stabilizing influence is provided.



## Infrastructure



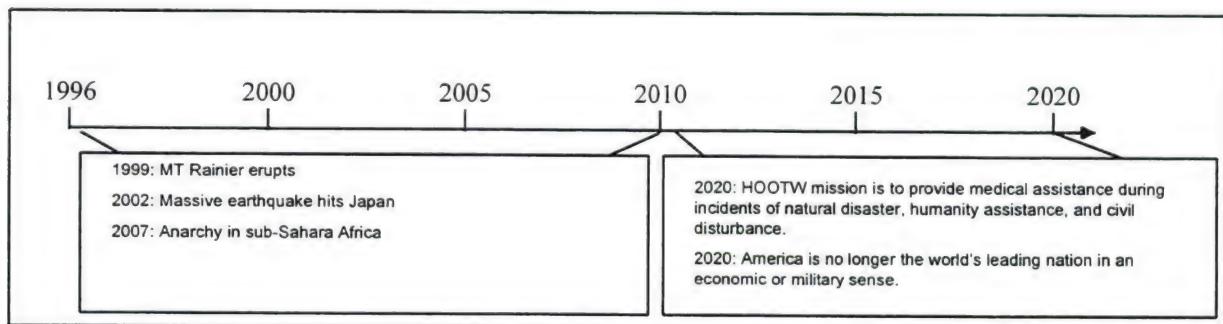
Due to the instability of governments throughout the world, the major emphasis of the military is on preparation for major conflicts due to the possibility of global war. Therefore, even though health operations other than war teams are frequently needed, there is little emphasis on adequate funding or modernization and scant training is available.

Due to the chaos within the US and throughout the world, the massive improvements in communications and engineering technology that occurred in the 1990s have slowed

dramatically by the year 2020 and the infrastructure has begun to crumble. Therefore, communications, medical equipment and supplies, and medical techniques have not improved significantly over those available in the 1990s. When health operations other than war teams are needed, there is often a long delay for the call to be received and for the response to be initiated. Old equipment and out-of-date supplies make delivery of services difficult. Teams often do not arrive at a site due to broken vehicles. The esprit de corps of the care-givers is poor. This results in a high absent without leave rate if a call is for work in a poor region. If the call is for work in a rich area, response is rapid; however, the responders expect under-the-table payments from the rich for services rendered. There is no central dispatch or monitoring facility and no oversight for the health operations other than war teams.

## ***Global Mind Change Timeline***

The following timeline illustrates the participant's view of the future in the Global Mind Change.



### **Major Services Provided**



Major Services provided are the same as described in the Third Wave. The broad mission of health operations other than war in the year 2020 is to provide medical assistance during incidents of natural disasters, calls for humanitarian assistance, incidents of civil disturbance, and calls for peacekeeping and peace enforcement.

The specific mission of health operations other than war is to provide health care to US and other operations other than war reactive forces (military and civilian) and incident victims.

There is a health operations other than war team assigned to each operations other than war force under a Unified Command. Each health operations other than war team is

structured for a varied level of response (Level 1, 2, 3 Responses) depending upon the nature and size of the summoning event.

After the immediate disaster/conflict situation is resolved, health operations other than war teams withdraw and local civilian agencies assume the responsibility of restoration. Since, during the Global Mind Change, there is social idealism and activism, a strong volunteer base for post-health operations other than war activities is active both within the US and overseas (an expanded "Doctors Without Borders" which is part of the "International Rescue Missions").



## Leadership



In 2020 there is a strong internationally-recognized US military organization for operations other than war at the Unified Command level. Background: In 1999 Mt. Rainier erupted, causing massive destruction in Tacoma, Washington, with 100,000 casualties. Congress mandated that the military develop a strong command, control, and communications (C3) for operations other than war. In 2002 there was an earthquake in Japan with one million casualties; the US operations other than war capability was mobilized to manage the disaster. Congress further mandated the military to expand its operations other than war mission to an outside the continental US mission. US military operations other than war capability became recognized throughout the world as the preeminent force for catastrophic events. In 2007 there was continental anarchy in sub-Saharan Africa of ungoverned proportions. The US military operations other than war operation lead the international coalition to establish a secure environment for economic and social recovery.

The 2020 health operations other than war capability includes both military and civilian personnel. This capability is the same as described in the Third Wave. For incidents in the US, a civilian agency is the initial responder. Smaller incidents are managed by local and regional agencies. For incidents in other nations, the US military operations other than war and health operations other than war are frequently called upon for assistance. For large non-conflict disasters such as earthquakes or hurricanes, civilian agencies may also respond overseas.

FEMA (federal civilian) and health operations other than war (military) are separate but coordinated agencies. Their relationship is the same as described in the Third Wave. FEMA does not respond during military conflicts but health operations other than war may be called upon to support relief efforts of a purely civilian nature. In the US, FEMA is in control; overseas, health operations other than war is in control.



## Building Sustainable Nations



In the Global Mind Change, by 2020, third-world nations are beginning to prosper economically and socially; therefore, the need to build "sustainable nations" is less critical. However, operations other than war and health operations other than war humanitarian assistance and assistance during limited regional conflicts (peace making and peace keeping) are periodically needed. Details of this assistance are the same as described in the Third Wave with operations other than war teams working with government officials and health operations other than war personnel becoming trainers of local medical professionals.

In 2020, America is no longer the world's leading nation in an economic or military sense. Having provided so many nations with the means for economic, social, and political development, America has achieved almost universal respect. The differences between the world's richest nations and the world's poorest nations have narrowed, although Africa is still catching up after civil wars. The wonderful aid work provided by America's health operations other than war group is still fondly remembered. America is seen as friendly yet protective in many countries. This enduring respect for America has led to a universal peace among nations. America's generosity and support for so many countries above its own self interest have removed the old suspicions and jealousies that existed in the time they called "the Cold War." There are still some small uprisings; but, using the training provided by health operations other than war and the US Armed Forces, many of these are being resolved without a great loss of life. Many Russians have expressed the opinion that if health operations other than war principles and personnel had been available in the 1990s, the Chechen uprising would never have cost 300,000 lives!



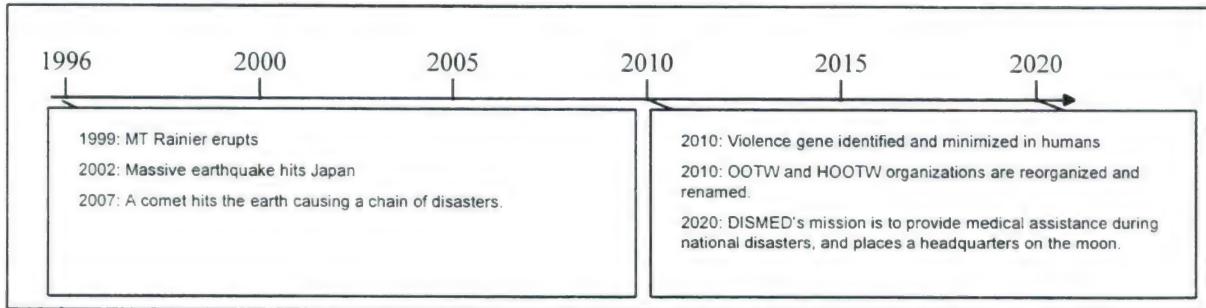
## Infrastructure



The technology available in the Global Mind Change is readily available to the health operations other than war effort. In the US, all people, structures and land areas have personal monitors, allowing central facilities to detect and assess natural disasters and medical emergencies as they are occurring. The equipment and supplies available to and required for the health operations other than war effort are the same as described in the Third Wave with miniaturized equipment, jetopters, and wrist watches that provide access to the information highway.

## The Transformation Timeline

The following timeline illustrates the participant's view of the future in the Transformation.



### Major Services Provided



After the Transformation, in 2020, there is little conflict between humans. In 2010, the "violence gene" was discovered and, with genetic engineering, was minimized in humans. With conflict and violence greatly reduced, natural disasters are the major global threat. Therefore, there is still a need for a global health operations other than war-like organization for immediate response in natural disasters. This global organization is called Disaster Care and the medical component is called Disaster Medical Care.

The broad mission of disaster medical care in the year 2020 is to provide medical assistance during incidents of natural disasters to disaster care teams and disaster victims. Services include trauma care, evacuation, hospitalization, preventive medicine, pharmacy services, environmental assessment, mental health counseling, dental care, veterinary care, and, only for extended deployments, primary care. Bionic replaceable human parts are readily available so loss of limb is not debilitating (the replacement limb is superior).

There is a Disaster Medical Care team assigned to each Disaster Care region. The structure of these teams is the same as described in the Third Wave. Each Disaster Medical Care team is structured for a varied level of response (Level 1, 2, 3 Response) depending upon the nature and size of the summoning event. After the immediate disaster/conflict situation is resolved, Disaster Medical Care teams withdraw and local civilian agencies assume the responsibility of restoration. A strong volunteer base for post-Disaster Medical Care activities is

active both within the US and overseas (an expanded "Doctors Without Borders" which is part of the "International Rescue Missions").



## Leadership



In 2020, Disaster Medical Care is a strong civilian, internationally funded and staffed disaster response organization possibly headquartered on the moon. Background: In 1999 Mt. Rainier erupted, causing massive destruction in Tacoma, Washington, with 100,000 casualties. Congress mandated that the US military develop a strong command and control for operations other than war. In 2002 there was a large earthquake in Japan with one million casualties; the US operations other than war capability was mobilized to manage the disaster. Congress approved and funded participation of the US military operations other than war forces under a United Nations operations other than war force. The United Nations operations other than war capability became recognized throughout the world as the preeminent force for catastrophic social events. In 2007 the Ponatoski comet struck the earth in the northern Atlantic Ocean causing a flood of biblical proportions which destroyed fresh water supplies and lead to disease and famine. United Nations operations other than war operations, lead by US command and control, established a secure environment for economic and social recovery. In 2010, when the violence gene was discovered, the operations other than war and health operations other than war organizations were reorganized into Disaster Care and Disaster Medical Care. Moon or satellite based monitoring stations could readily detect, assess, and coordinate their responses to natural disasters through modern earth-moon telecommunications.

In 2020, specialty training for Disaster Medical Care personnel is conducted at an evolved uniformed services university of health services (now called disaster medical care university of health services) with emphasis on emergency and trauma services. This training is the same as described in the Third Wave with a new specialty called "disaster relief services," and compulsory service for health care providers at Disaster Medical Care.



## Building Sustainable Nations



In circumstances of rapid progress and effective conflict resolution, violence between nations has become rare. Since most nations are prospering economically and socially it is unusual to engage in building sustainable nations.



## Infrastructure



In 2020, the technology available in the Transformation is readily available to the Disaster Medical Care effort. All people, structures and land areas have personal monitors, allowing moon facilities to immediately detect and assess natural disasters and medical emergencies as they occurred. The equipment and supplies available to and required for the disaster medical effort are the same as described in the Third Wave with miniaturized equipment, jetopters, and wrist watches that provide access to the information highway.



### 5.2.3 Health Systems for Military Communities

The Health Systems for Military Communities group addressed goals of health care, consolidation of medical services, fundamental innovations, and other issues driven by the four scenarios studied.

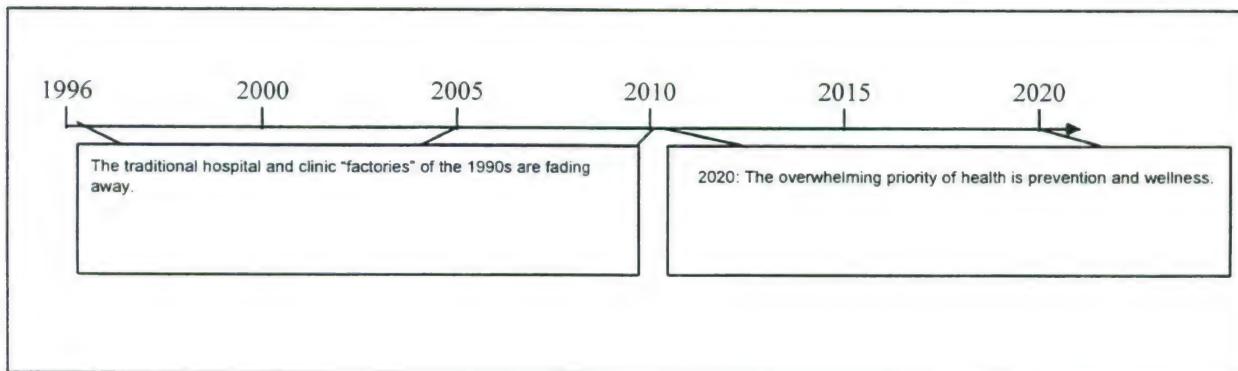
The following sections will explore the future of Health Systems for Military Communities from four viewpoints.

#### TOPIC AREAS

- ◆ Priorities of Health
- ◆ System Structure
- ◆ Key Innovations/Tools

#### *The Third Wave Timeline*

The following timeline illustrates the participant's view of the future in the Third Wave.



#### Priorities of Health



In 2020, the overwhelming priority of health is prevention and wellness. Health promotion is integrated into the daily life of military communities and the focus on spiritual and psychological aspects of individuals is

unprecedented. Empowered beneficiaries take a proactive role in monitoring deviations from their normal homeostasis, and in alerting their primary care providers of these deviations. There are many tools available to help beneficiaries take this proactive role. Individual biosensors, pioneered by the military, are continuous, seamless, and accessible to all members of the community as part of their benefits package. These biosensors allow data tracking by automated regional centers with out-of-limit alerts electronically routed to the individual as well as to their provider as determined by preset protocols. Lifestyle modifications are sent to the individual in real time to optimize personal daily health status. Also, electronic house calls are routine thus drastically reducing the number of inpatient and outpatient visits. Patient education is encouraged through access to electronic media and virtual reality applications specifically targeting individual questions and concerns. Military and community incentives for optimization of health status provide the necessary social pressures to eliminate tobacco, alcohol, and drug abuse so prevalent in previous generations.



## System Structure



The health systems' structure for military communities in 2020 is very different from that of previous generations. A primary component of the structure is health monitoring stations. Each patient is linked to a station by computer and monitored by small numbers of professionals who make decisions by protocols. In the latest development, a tiny attachment to your vanity mirror analyzes your weight and blood pressure and scans your body for masses or lesions. Your daily shower is not just a shower, it is an update of your current health status. The traditional hospital and clinic "factories" of the 1990s are fading away. Telehealth and biosensors are commonplace. Military health care for the most part is privatized and the government is essentially out of the direct care business. However, the government has not relinquished its right to legislate regulations governing the industry.



## Key Innovations/Tools

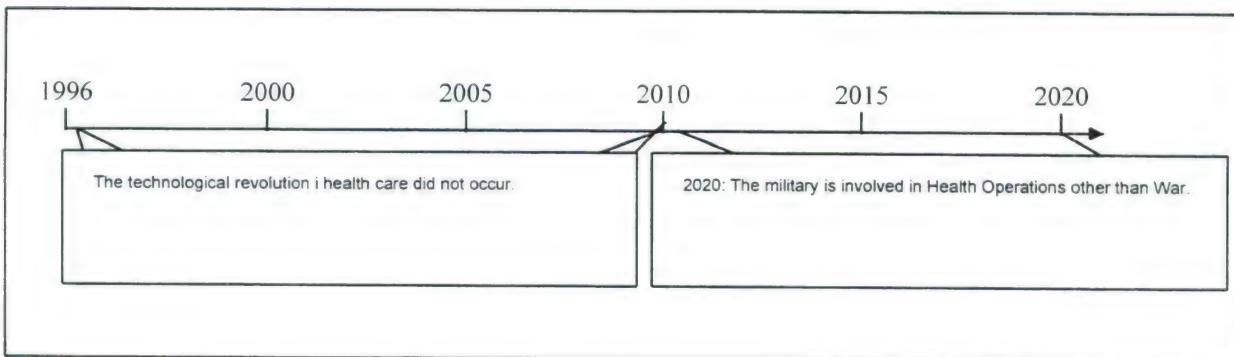


Key innovations include the proliferation of non-invasive procedures, nano-vaccines and drugs that cure most diseases.

There is an increase in the "types" of individuals providing health care. The traditional doctor/nurse paradigm is broken. Health consultants and coaches are legally allowed to deliver the basic health promotion and wellness packages.

## The Dark Side Timeline

The following timeline illustrates the participant's view of the future in the Dark Side.



### Priorities of Health



Priorities of health are stuck where they were 20 years ago.

Primary care is the prevalent health care delivery model, but the great strides anticipated in areas of wellness and prevention have never materialized. The wealthy are revolting against the taxes imposed on them to care for the hordes of elderly, who despite the poor economic times, are living longer and longer. Euthanasia, with individuals' approval, is now legal and "permanent sleep tablets" are an over the counter item. Unfortunately, many elderly do not want to die but do so because they perceive themselves as a burden on their families. While there is still an all voluntary military, the educational, emotional, and psychological ability of recruits is declining. The services are spending more money on the education, social service, and disciplinary issues that plagued them in the past. Drug use for the first time in 20 years is a top military agenda item.



### System Structure



Consider these "stages" of care: Prevention, Early Detection, Diagnosis, Prognosis, Treatment, Rehabilitation and Maintenance.

In 2020, "the System" in the Dark Side does little of the first two (Prevention and Early Detection) and relatively little of the last two (Rehabilitation and Maintenance). In fact, health care is delivered in much the same manner as the 1990s. Everyone recognizes that the better model would include more of the first and last two "stages" but the nation just cannot extricate itself from business as usual. Failure to move in the direction of wellness and prevention IS the dark side.



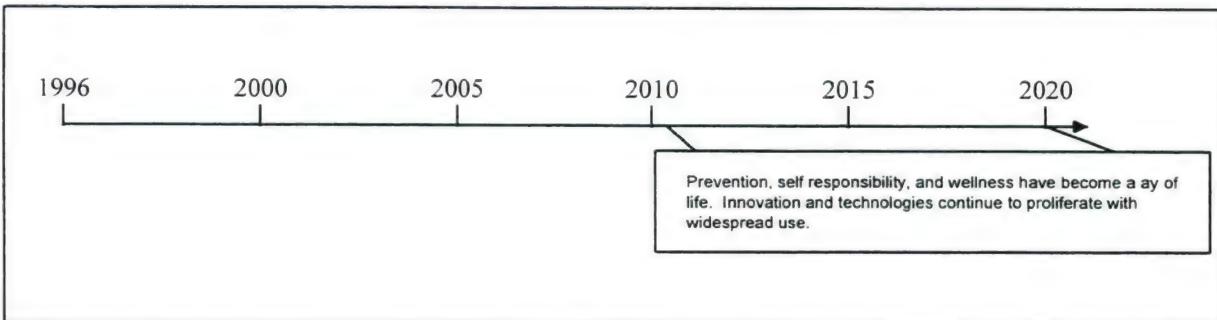
## Key Innovations/Tools



The technological revolution in health care did not occur in the 1990s, as had been predicted. By 2020, advanced technology is available but so cost prohibitive that it is only displayed in museums and touted as examples of what will be available for future generations. The military is doing limited testing of some of these technologies to determine implications for mass use, but the cynics have had the last laugh since things have not changed a whole lot over the years.

## Global Mind Change Timeline

The following timeline illustrates the participant's view of the future in the Global Mind Change.



## Priorities of Health



In 2020, prevention, self responsibility, and wellness have become a way of life within the military community, with an emphasis on spiritual and emotional well-being. One way well-being has been addressed is by alleviating the isolation associated with deployments. All military families are provided interactive video teleconferencing capability when members are deployed. Also, when our military personnel are sent to assist foreign nations, their health risks take on a new dimension and education is focused in that area.



## System Structure



In 2020, the system is similar to that experienced in the Third Wave with the addition of increased emphasis on the emotional and mind expanding aspects of care. One outcome of this new emphasis was a recent ribbon-cutting ceremony at the Armed Forces Institute of Alternative Therapies. In 2020, the military is

involved in Health operations other than war. The military is consulting with other less fortunate countries to deliver a model of health care compatible with their lifestyles and means.



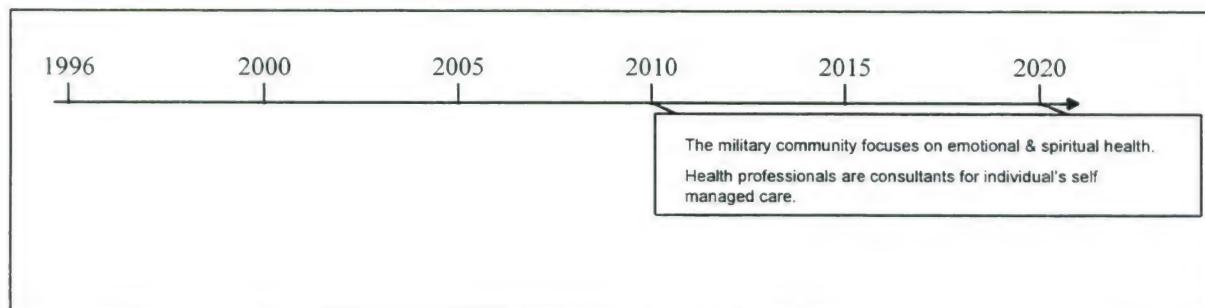
## Key Innovations/Tools



Innovations and technologies continue to proliferate with widespread use. Moral, legal and ethical issues abound and the world is struggling with ways to manage and keep up with the complicated questions of the day.

## *The Transformation Timeline*

The following timeline represents the participant's view of the future in the Transformation.



## Priorities of Health



The military community is focusing on emotional and spiritual health along with intellectual development. Treatment of illness is in the background and prevention is not of primary importance because fixing health problems is simple, non-invasive and inexpensive. Savings from traditional medical care are reinvested in spiritual growth programs to include meditation, relaxation, and imagery to enhance military performance. Virtual reality has allowed individuals to travel into any Nirvana the mind can create. Non destructive methods of "escaping" the trials and tribulations of daily life are common. Also, the military has become the leader in developing policies for handling genetic information.



## System Structure



Health professionals are consultants for individuals' self managed care. While success for healthy lifestyles comes from peer pressure and monetary rewards, the primary medical challenge is mental and spiritual health.

Providing care over distances or in isolated spots is no longer a problem. Providing such care has greatly enhanced military capabilities but has also decreased the number of medical personnel in uniform.



## Key Innovations/Tools



Technology is everywhere and can do almost anything.

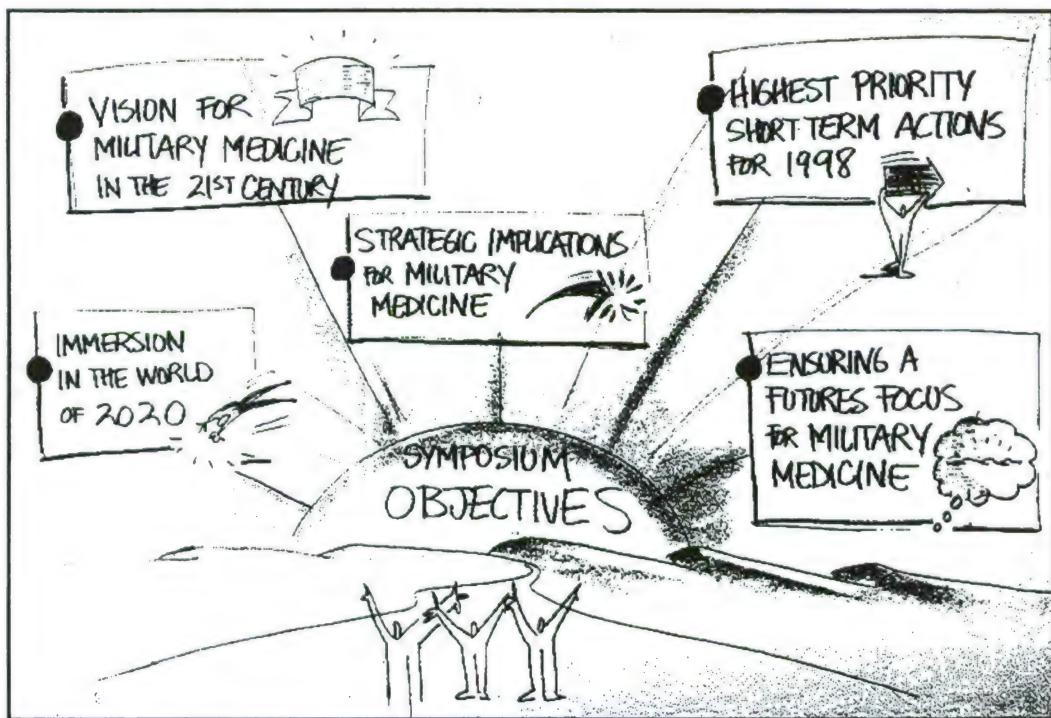
Nanotechnology is so commonplace it is taught in grammar school.

Biochips and genetic enhancement are frequently deployed technologies.

## SECTION 6.0 VISIONS OF A PREFERRED FUTURE FOR THE MHSS

### 6.1 Developing a Vision

Although it was beyond the project's charter to develop a new official vision for the MHSS, participants at the 1996 September Futures Symposium created their own shared vision for military medicine in the 21st century. This vision was the culmination of many months of effort on the part of the people involved in the MHSS 2020 project.

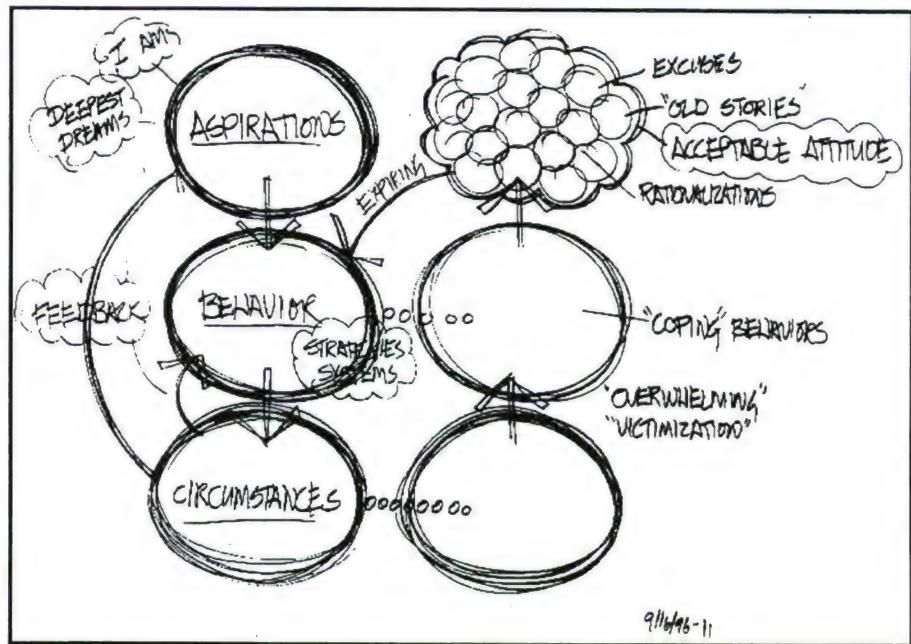


Phase I of the overall MHSS 2020 project included an exploration of visions of the future within individual clinical and administrative specialties. The scenario development in Phase II of the overall MHSS 2020 project explored positive futures as well as probable and negative futures. In exercises at the Symposium, participants reviewed the four scenarios developed in the project and selected the **Global Mind Change** scenario as "most desirable" as well as reasonably plausible. Key elements of this scenario emerged as important themes in the Symposium's vision development exercises.

SCENARIO	LIKELIHOOD	PREFERENCE
1. THE THIRD WAVE	33%	20%
2. THE DARK SIDE	24%	3%
3. GLOBAL MIND CHANGE	23%	38%
4. THE TRANSFORMATION	12%	31%
OTHER	6%	7%

Early in the project, the participants in the MHSS 2020 process were exposed to the Aspirations Model developed by Roger Fritz. This model stresses the importance of clarifying aspirations for the future, aligning behavior with aspirations, and shaping circumstances (as opposed to being a "victim of circumstances" working in a reactive rather than an aspiration-driven manner). At the

Symposium, the "futurists in training" reflected on their previous work and again employed the Aspirations Model. In small groups, they shared their personal aspirations for the best that military medicine could be and envisioned potential developments between now and 2020 that would make them most proud of their profession. As each person spoke, group members identified the phrases and statements that seemed most powerful and the common themes that resonated most strongly within the group. After this exercise was completed, a team of volunteers met to draft a vision statement. The goal was to express the major common themes that emerged from the discussions in heartfelt, poetic language.



The discussions of the volunteer vision drafting team proved deeply moving. Senior military health leaders, many with experience in combat situations, reflected, sometimes with very strong feelings, on the highest aspirations that had motivated their careers and on the life experiences that highlighted the highest values of military life and military medicine. The discussion led to two short statements, a statement of **shared identity** and a draft MHSS **vision**. Subsequently, these statements were discussed in group sessions, and the Symposium attendees reached consensus that the statements captured the essence of the most important common themes from the vision discussion.

## 6.2 Statement of Shared Identity

*We are the healers who walk with warriors in unison. We are on a journey to do what must be done. We are a community of healers who know health is a wholeness. Our caring runs as deep as the pain of war. We take those who are broken and make them whole. We serve through a system of values, our roots reaching down to a stream flowing from generation to generation. Duty, honor, loyalty, and courage to sacrifice are the bonds that hold us together. We are an awesome force of warriors and healers protecting the values of home.*

## 6.3 The MHSS 2020 Vision

*The MHSS is a model for future health care delivery systems, preferred by patients, providers, and line commanders. We serve our country and the world by sustaining a warrior capacity that keeps others from engaging in war.*

*We are an integrated health care system functioning as a unified command with a seamless delivery of health care to the entire military family. We demonstrate prevention as the most cost effective strategy for readiness and knowledge as the most powerful form of prevention.*

*We are builders of nations and healthy communities. We respect and protect the environment as an essential component of health. We employ the strengths of our technology to design disease and illness out of our society. We express the depth of our compassion to make people whole. We are essential partners and a major force in the creation of health and global peace.*

## 6.4 The Relationship of Vision and Strategic Planning

A vision is a “future for the heart.” It is a compelling statement of what we want to happen and what we will work to create. Used properly, vision is the engine that drives strategic planning and gives strategies their force.

*A shared vision is not an idea. It is not even an important idea such as freedom. It is, rather, a force in people’s hearts, a force of impressive power. It may be inspired by an idea, but once it goes further—if it is compelling enough to acquire the support of more than one person—then it is no longer an abstraction. It is palpable. People begin to see it as if it exists. Few, if any, forces in human affairs are as powerful as shared vision.<sup>1</sup>*

To be effective a powerful vision must possess characteristics that will compel individuals and organizations to act. Based on the collaboration of many vision development efforts in both the public and private sectors, the Institute for Alternative Futures developed a set of characteristics that a vision should possess. A powerful vision will:

- Be an inspiring statement
- Define what you want to create
- Stretch beyond the limits of current realities
- Conceivably be achievable within a specific time frame
- Be timeless and enduring.

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<sup>1</sup> Peter M. Senge, *The Fifth Discipline: The Art & Practice of the Learning Organization* (New York: Doubleday, 1990), pp. 206, 231.

Once we have a vision, strategic planning is needed to focus our efforts on achieving that vision. Strategies are high-level, integrated sets of actions we will take to achieve our vision. They address the identification and deployment of resources and the external environment. From strategies, tactical or operational plans are developed that explicitly identify the set of actions that people will take to realize the vision. Figure 6-1 provides management consultant Michael Doyle's comparison of visions and strategies, highlighting the differences between them.<sup>2</sup>

<b>Strategic Plans and Visions</b>	
<ul style="list-style-type: none"><li>◆ Strategic Plans<ul style="list-style-type: none"><li>❖ Directional</li><li>❖ Linear</li><li>❖ Reaction to trends &amp; competition</li><li>❖ Work forward to the future</li><li>❖ Have to know how to get there</li><li>❖ Completed Plan</li><li>❖ Secret</li><li>❖ Plan Language<ul style="list-style-type: none"><li>➢ Cool</li><li>➢ Rational</li><li>➢ Mind-focused</li><li>➢ Bureaucratic</li></ul></li></ul></li><li>◆ Visions<ul style="list-style-type: none"><li>❖ End state oriented</li><li>❖ Holistic view - a snapshot</li><li>❖ Desire to create in the world</li><li>❖ Work backward from the future</li><li>❖ Unclear how to get there</li><li>❖ Dynamically incomplete</li><li>❖ Public</li><li>❖ Vision Language<ul style="list-style-type: none"><li>➢ Hot</li><li>➢ Heart/spirit</li><li>➢ Intuitive</li><li>➢ Poetic</li></ul></li></ul></li></ul>	

**Figure 6-1. Strategy and Vision**

Both vision and strategy are critical. Without vision a strategic plan is a response to circumstances, not a tool for shaping the future toward our aspirations. Without strategy, a vision is an unrealized hope. During the Symposium, the draft MHSS 2020 vision was used as the framework for a series of strategic planning exercises. Results of those exercises are summarized in Sections 7 and 8.

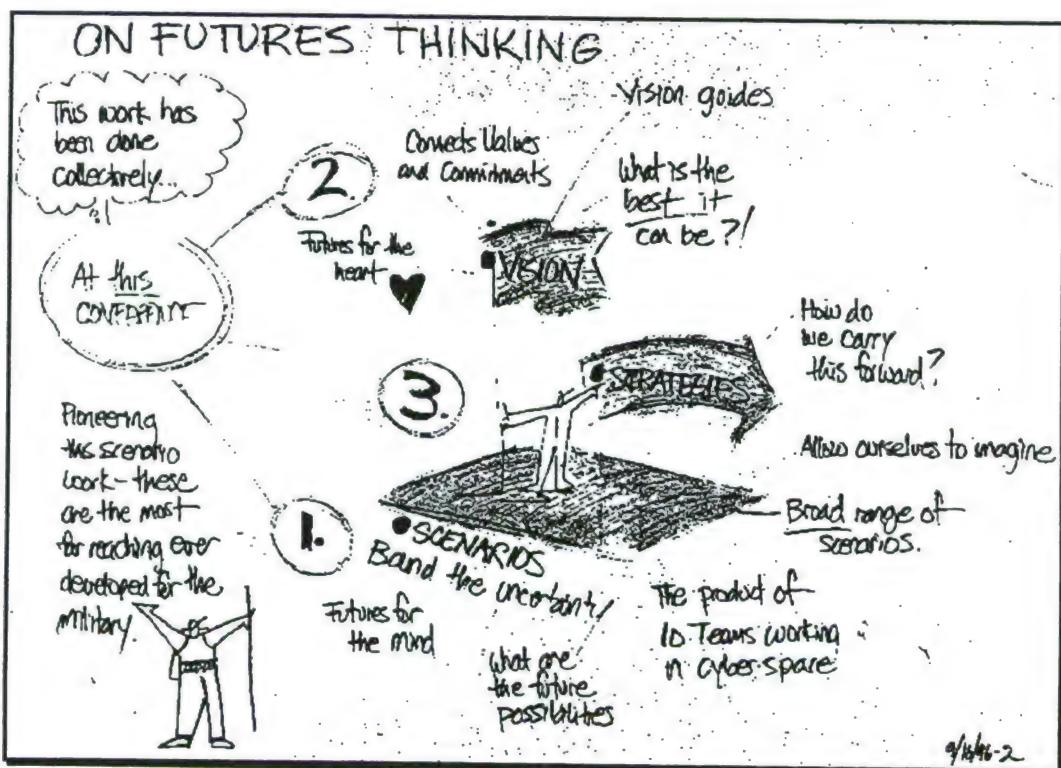
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<sup>2</sup> Michael Doyle, "Quest for Vision," *Association Management*, September 1990, pp. 29-33.

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## SECTION 7.0 STRATEGIES FOR MILITARY MEDICINE

On the second day of the September Symposium, participants reviewed the current MHSS Strategic Plan in light of the MHSS 2020 vision they had just developed. The objective was to bring the vision's long-range perspective to bear on current realities and suggest changes in the current Strategic Plan for consideration by the MHSS. The following recommendations for broad changes in the strategic plan emerged from the discussions. Specific recommendations for 1998 are presented in Section 8.0.



- Recognize medical resources as a fundamental asset for achieving national objectives
- Integrate health promotion more clearly into readiness, Health Operations Other Than War (HOOTW), and day to day care
- Centralize HOOTW as a function of the MHSS
- Nurture a process that fosters personal capacity to relate alternative futures and vision to strategies

- Shift to partnered and self-managed care
- Design disease out of the armed forces and society.

As seen from moving right to left in Figure 7-1, the four scenarios or *alternative futures* illustrates the overall process MHSS 2020 participants used to generate potential strategies. The scenarios broadened the canvas of possibilities, both good and bad, that participants were

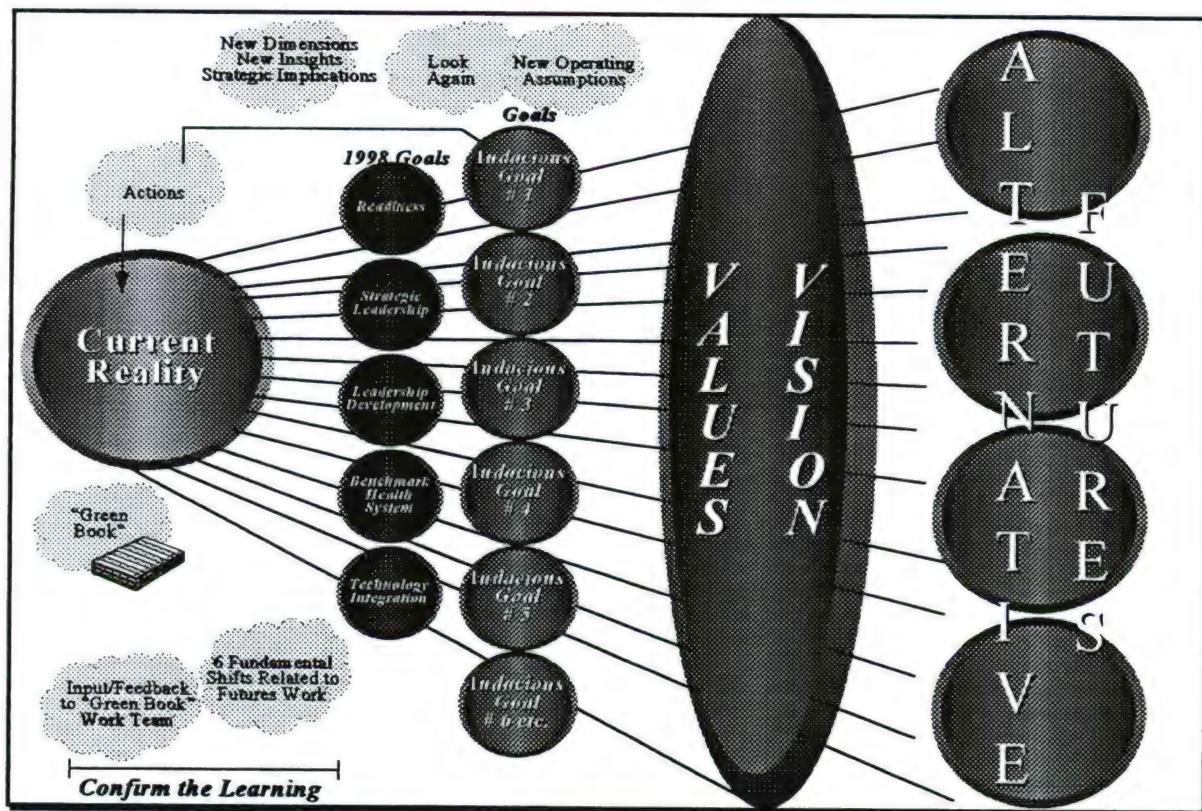


Figure 7-1. Strategy Generation Process

able to consider and bring into the visioning process. The *vision* provided a compelling statement of the aspirations that participants hold for the future—what they most deeply want to happen and what they will work to create. The vision was grounded in *values* that defined a shared identity. It formed a lens through which both the scenarios and potential actions could be viewed. A set of ambitious *goals* for 2020 was derived from the vision, and strategic *actions* were recommended for moving from the *current reality* to the long-term goals. New insights and operating assumptions derived from the four alternative futures provided a basis for recommending changes in the current MHSS Strategic Plan.

In sections 7.1 and 7.2 are a list of the nine “audacious goals” developed at the Symposium and a sample of the strategies the participants recommended to accomplish each goal. The results were produced in a single strategic planning exercise with MHSS 2020 participants. The scenarios and vision developed in MHSS 2020 can be used in many other settings to allow different groups within the military health system to generate their own long-term goals and strategies.

## 7.1 “Audacious Goals”

The following “audacious goals” were developed as examples of the kind of ambitious, specific, long-term goals needed to operationalize the MHSS 2020 vision:

1. By 2005, prevention, self-managed care, telemedicine and outpatient care reduce facility requirements by 50%
2. By 2005, MHSS spending for preventative and partnered self-managed care is increased from 1% of MHSS budget to 50%
3. By 2005, the number of active duty soldiers being medically discharged drops by 75%
4. By 2010, the golden hour in the warzone is expanded to six hours
5. By 2005, the need for warzone in-theater hospital beds is reduced by 75%
6. By 2005, the primary care usage rate is reduced by 75%
7. By 2010, partnered self-managed care causes a 1/3 reduction of costs per person per year
8. By 2005, Health Operations Other Than War has a well-developed doctrine, is formally structured, and is published in the Defense Planning Guidance
9. By 2020, 50% of the MHSS budget is allocated to partnered self-managed care.

## 7.2 Strategies to Achieve the Goals

***AUDACIOUS GOAL # 1 - By 2005, prevention, self-managed care, telemedicine, and outpatient care reduce facility requirements by 50%***

### ***Technology Strategies:***

- Implement widespread use of genetic testing in order to predict potential health problems and to avoid these problems through lifestyle changes
- Adopt use of electronic medical records
- Implement routine home and field use of a growing array of self-monitoring and testing tools to allow early detection of departures from normal biochemical ranges and early treatment of illness
- Implement low cost personal biomonitoring to provide constant personal health information to the wearer as well as to the health provider
- Incorporate widespread utilization of telemedicine technology to provide remote interaction between the patient and provider
- Implement widespread provision of the highest quality information and services for disease prevention and self-care (including pamphlets, books, training programs, CD-ROM and on-line access, and "health coach" software agents).

### ***Social Strategies:***

- Make commanders' efficiency reports dependent upon reductions in inappropriate health facility use
- Teach self-care in school and as part of basic training
- Create a national program aimed at comprehensively developing military bases as "Healthy Communities."

***AUDACIOUS GOAL # 2 - By 2005, MHSS spending for preventative and partnered self-managed care is increased from 1% of MHSS budget to 50%***

***Financial Strategies:***

- Boost the funding and emphasis for family planning
- Dedicate money for health promotion (e.g., \$100 per head per year)
- Provide financial incentives for healthy behaviors
- Move towards a voucher system in which an insurance deductible is based upon an individual's behavior
- Develop a partnership with National Institutes of Health and Center for Disease Control to create prevention and self-care programs and materials for both military and civilian use.

***Social Strategies:***

- Implement home-based health systems that reduce the need for treatment of illness
- Make all post housing smoke-free
- Implement mandatory health promotion classes for all beneficiaries
- Create and train health promotion specialists
- Develop outcome measures for prevention to document its health and financial benefits.

***AUDACIOUS GOAL # 3 - By 2005, the number of active duty soldiers being medically discharged drops by 75%***

***Social Strategies:***

- Optimize the health and “healthy behavior” prescreen for military accessions
- Develop a comprehensive system of health promotion, prevention, early detection and self-care
- Develop a fully integrated and continuous system of military health
- Develop new warzone protection technologies
- Conduct research on performance enhancing drugs to boost performance and reduce chance of injury
- Conduct research on body strengthening technologies (i.e. diamond fiber reinforcement of joints, bones, and tendons).

***AUDACIOUS GOAL # 4 - By 2010, the golden hour in the warzone is expanded to six hours***

***Technological Strategies:***

- Develop suspended animation “trauma pods” with automated life support systems
- Create advanced self-aid technologies including auto-administered antidotes and antibiotics, auto-stabilization and auto-homeostasis devices that are self activated upon injury
- Optimize the war fighter with immune system enhancers
- Equip medics with Smart Assistant Terminals that possess capabilities such as intelligent intravenous drug dispensing, field biomonitoring, expert system diagnosis and advice, and telementoring

- Use high technology medical aids such as artificial blood, genetically engineered replacement organs, and artificial limbs
- Conduct research on nanotechnology aimed at achieving nanomedicine applications such as artificial programmable immune systems and cell herding machines for rapid healing.

***AUDACIOUS GOAL # 5 - By 2005, the need for warzone in-theater hospital beds is reduced by 75%***

***Training Strategies:***

- Enhance medical staff ability to treat in the air and be able to perform surgery in-route
- Reduce Disease Non Battle Injuries (DNBI) with psychic training.

***Technological Strategies:***

- Focus research on unmanned transport out of the warzone
- Increase the medical evacuation range.

***Social Strategies:***

- Fully implement Health Operations Other Than War as a strategy to prevent global and regional conflicts.

***AUDACIOUS GOAL # 6 - By 2005, the primary care usage rate is reduced by 75%***

***Technological Strategies:***

- Enhance use of teleconferencing with providers
- Provide an MHSS computer in every home.

***Social Strategies:***

- Promote aggressive self-care and risk-reduction programs that target self-destructive behaviors
- Create community health centers to disseminate health and self-care information
- Create policies on living healthy lifestyles as a condition of employment.

***AUDACIOUS GOAL # 7 - By 2010, partnered self-managed care causes a 1/3 reduction of costs per person per year***

***Technological Strategies:***

- Use regular biomonitoring via low-cost home monitoring equipment and personal status monitors
- Enhance the use of information technology as a method of disseminating self-managed care information.

***Social Strategies:***

- Tie health care benefits to lifestyle choices
- Restructure MHSS into a horizontal organization
- Provide additional vacation days for those demonstrating healthy lifestyles
- Provide family health sabbaticals with nutritious diet, exercise, and mental relaxation as rewards for exceptional accomplishment and meritorious behavior.

***AUDACIOUS GOAL # 8 - By 2005, Health Operations Other Than War has a doctrine, is formally structured, and is published in the Defense Planning Guidance***

***Strategies:***

- Institute a long-range planning process for assessing future HOOTW demand and building HOOTW capacity based on lessons learned from military and non-military organizations
- Create joint HOOTW doctrine with the State Department
- Exploit medical capacity as a major asset for fostering national and global security
- Create a national data repository that contains information about armed forces medical intelligence
- Aggressively pursue training and service activities within the indigent and rural areas of the US.

***AUDACIOUS GOAL # 9 - By 2020, 50% of the MHSS budget is allocated to partnered self-managed care***

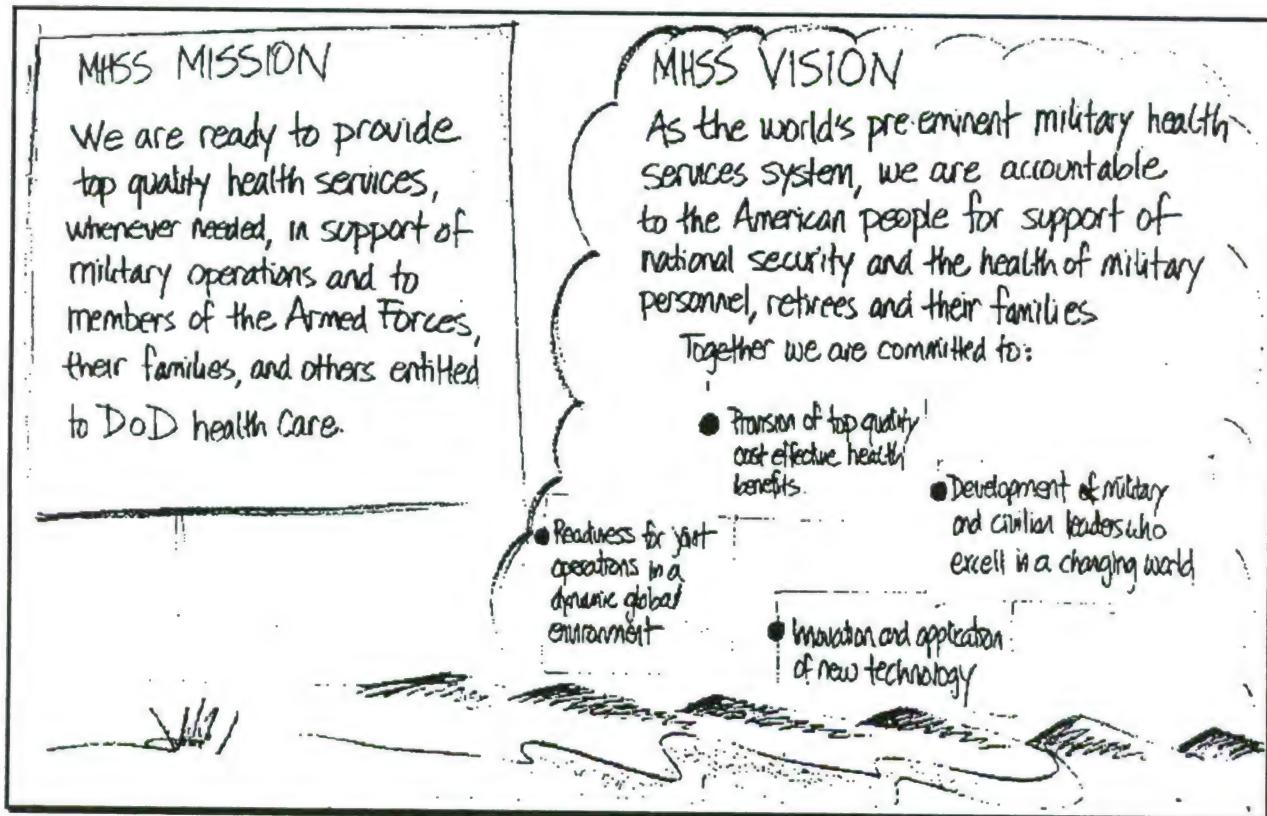
***Strategies:***

- Make partnered self-managed care part of the Joint Military Essential Task List
- Develop computerized medical protocols to determine self-treatment
- Create a military health care cable/internet site to disseminate self-care information
- Create "health coach" software agents capable of motivating behavior change and gearing self-care advice to individuals based on their individual learning styles and medical records.

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## SECTION 8.0 1998 RECOMMENDATIONS FOR THE MHSS

During the 1996 September Futures Symposium, participants discussed strategies for the MHSS. Because many of the participants had already been involved in examining key forces, creating scenarios, and discussing the best that could be for military medicine, they came to the exercise with a futures outlook.



During the Symposium, each of the goals and strategies in the current MHSS Strategic Plan was examined in the context of the four MHSS 2020 scenarios. By examining MHSS goals/strategies in light of a variety of future environments, the participants were able to assess the robustness of the strategies and offer suggestions for improvement.

### 8.1 1998 Priority Actions

The Symposium participants identified the following priority actions to be undertaken by the MHSS in 1998:

- Make aspects of “health promotion, wellness, self-care, and healthy communities” THE military medical mission—receiving an appropriate first priority for budget, a dedicated slice of capital funding, people, space, and leader emphasis
- Promulgate Health Operations Other Than War as one of THE primary readiness tools for advancing national policy, such that HOOTW operations become promoted, have a doctrine and are appropriately resourced for personnel, training, and equipment
- Define US medical readiness operations by their global scope and concentrate on fully supporting and medically leading international coalition forces
- Market MHSS strategic long-range and near-term planning processes and products at all levels, internally and externally
- Ensure that all information and communication technologies are platform independent, inter-operable, standardized, and fully accessible throughout the MHSS.

## **8.2 Proposed Strategies for Addition to the MHSS Strategic Plan**

The participants proposed specific suggestions to the MHSS Strategic Planning Committee for enhancing the current MHSS Strategic Plan. Sections 8.2.1 through 8.2.5 detail those suggested changes and additions to this plan.

### **8.2.1 Global Medical Readiness Capabilities**

- We will provide our combatant commanders a healthy, fit force using a well-trained, ready and equipped coalition medical force
- We will prioritize our resources to support operative missions
- In support of the national strategy of engagement and enlargement we will provide medical forces as a strategic national resource
- We will maximize the capabilities of the global force by developing and providing challenging, effective technology-leveraged training

- We will further refine leader development for HOOTW operations. We will convene a Tri-Service working group to address the command, control, training, funding, etc. for HOOTW missions.

### **8.2.2 Strategic Leadership of MHSS**

- We will work collaboratively to market the MHSS strategic plan and process at all levels, internally and externally.

### **8.2.3 Leader Development**

- We will enhance and sustain an integrated system of quality education, training, and professional development to produce and retain futures-oriented, skilled dynamic leaders
- We will enhance and sustain a culture which encourages participation and contribution at all levels, fosters pride, and attracts and retains world-class personnel.

### **8.2.4 Benchmark Health System**

- We will implement a world-class health delivery system which is:
  - Capable of meeting the readiness demands of DoD
  - Health and fitness focused
  - Partnered and self-managed care oriented (includes self-managed care in readiness realm).
- We will clearly communicate and market the elements and scope of the health entitlement/benefit associated with military service so that our line commanders, patients and providers will be fully-informed consumers
- We will work aggressively to ensure appropriate resources are available to deliver the military health entitlement benefit by:
  - Establishing and communicating the true value cost of readiness
  - Seeking alternative, legitimate missions and funding

- We will develop a focused integrated approach to health promotion and prevention for the force and other beneficiaries with goals of a ready force and a healthy community.

### **8.2.5 Technology Integration**

The participants developed one additional goal set of strategies for the consideration by the MHSS Strategic Planning Committee.

*Goal: We will champion the exploitation of technology through development, utilization, and integration of systems to design disease and illness out of society and mitigate disability.*

#### ***Strategies***

- We will define and prioritize the full range of technology needed to satisfy contingency, peacekeeping, nation building and antiwar missions
- We will internalize a philosophy of life cycle management for technology acquisition
- We will proactively partner with industry to develop inter-operable, standards-based technologies which will have application across all settings (military, civilian, and international).

## SECTION 9.0 CONCLUSION

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RADM William Rowley, in his foreword to this book, asked the fundamental question of why we should consider exploring the future of the Military Health Services System. To answer that question, we must first put into perspective what has been accomplished by more than two hundred military and private sector participants during the past nine months. As with many of the issues MHSS 2020 has explored, the answer is counter-intuitive.

The value of MHSS 2020 is not contingent upon developing forecasts of what the world, the armed services, or the MHSS might look like in the year 2020. Although the primary mechanisms employed during this first year were a set of tools for scenario development, visioning, strategies, and simulation models, there is little independent value in these tools. Nor is there any inherent value in technology, one of the central tenets discussed over the past nine months. Peter Drucker, in his book, *The New Realities*, suggests that technology simply expresses our world view and is an extension of us, but it has no intrinsic value.

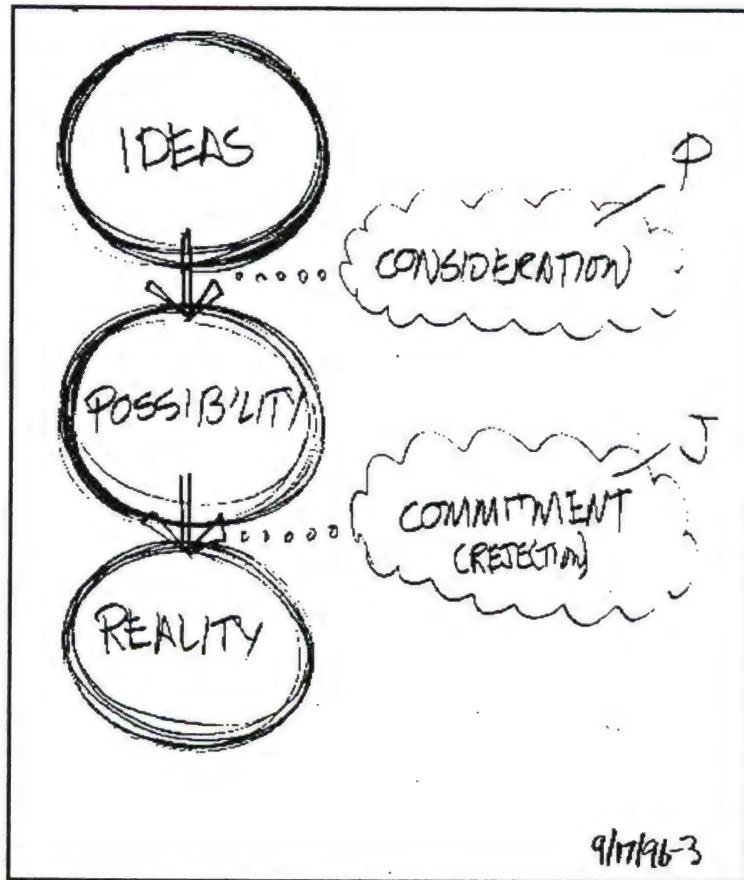
*Technology is not nature, but man. It is not about tools; it is about how man works. It is equally about how man lives and how man thinks*<sup>1</sup>

Drucker's comment on technology has profound implications for all involved in shaping the future MHSS. The basic difference between now and nine months ago is that now there are several hundred military health professionals who **believe** that the future is fundamentally a mind change. They see the present differently and possess a strong tolerance for uncertainty. They also **understand** that vision fulfillment of a successful MHSS will require a cultural change that will take another three to ten years.

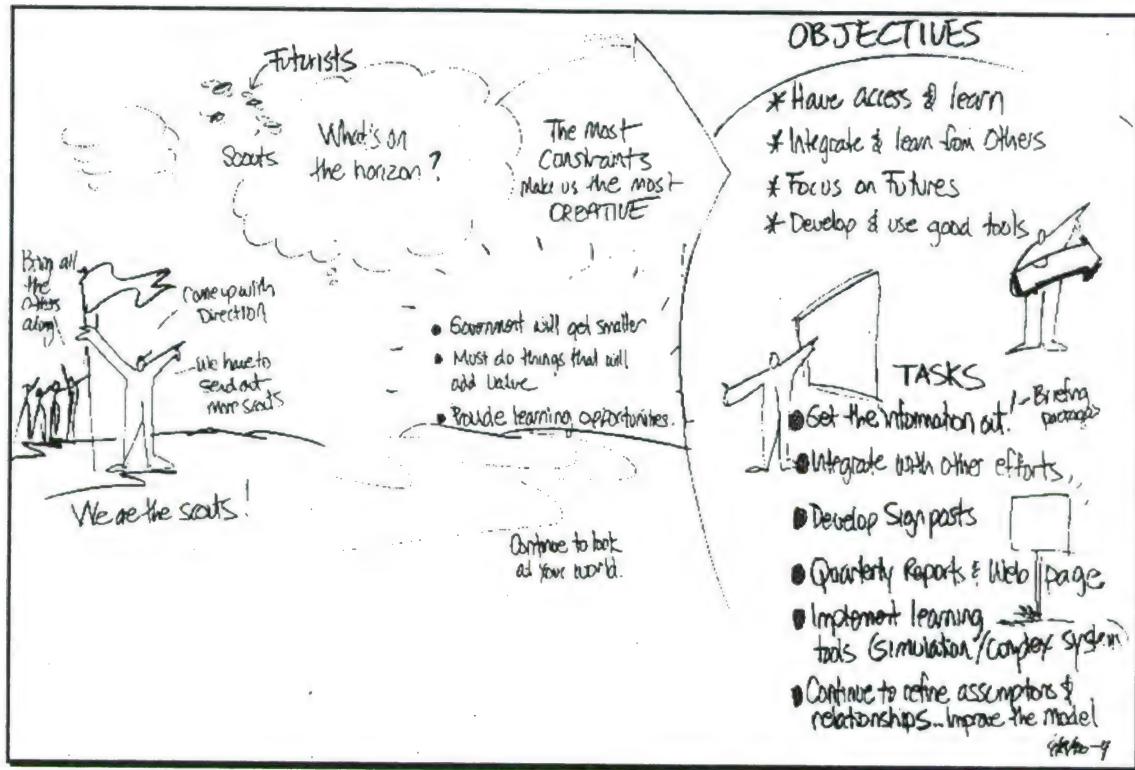
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<sup>1</sup> Peter F. Drucker, *The New Realities* (New York: Harper and Row, 1989), p. 261.

It is not critical that the forecasts or scenarios play out over time as we have described in this book. We recognize our inability to predict the future. What is critical is that the MHSS 2020 participants see today differently and believe that they can influence the future versus reacting to it. When asked to what extent the MHSS 2020 process influenced their view of the future, the participants, based on a survey following the September 1996 Futures Symposium, overwhelmingly suggested strong confidence in their ability to influence the future. They further stated their day-to-day actions are being influenced by the **thinking** they have done about how the future may unfold. Now, the participants are scanning their environment and noticing things outside their previous field of view. They are examining the long-term implications of short-term decisions and they are pursuing aspirations, not just reacting to circumstances.



There is tremendous energy in a group that feels empowered to create a preferred future for military health. There are profound implications of approximately 350 symposium participants exposing their organizations to the overall MHSS 2020 process, products, visions and strategies. There is great potential for expanding this shared vision by asking fellow members of the MHSS to consider it and commit to it. We see extensive learning opportunities in disseminating the results of this first year throughout the military health system and exploring ways to implement audacious goals.



As we move into 1997, MHSS 2020 will seek to multiply the fruits from this initial effort by disseminating the results throughout the military health system. The key to defining and implementing the future we want depends on our ability to engage all levels of military medicine in the MHSS 2020 process. We will continue to scan the environment, conduct focused studies, integrate with other key organizations who are examining the world in the 21st century, and employ futures tools that stimulate thinking and cultural change throughout military medicine.

*We are constrained only by the limitations we impose upon ourselves.*

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## APPENDIX A. WILDCARDS

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- Superwaves - waves that alter the brain waves of populations challenged by disease by creating positive vibrations that create a controlled super-active immune/phagocytic/host protecting-pathogen depleting response.
- Warriors are injected with non-bots which make them healthy and super-strong.
- Adversaries will come from distant places, such as the sea or "higher life forms."
- Small implantable devices use voice recognition to sense, interpret, and convert language "on the fly."
- All surgery is performed non-invasively. The immune system can be regulated at will. Rapid healing of wounds (in hours) is an everyday occurrence.
- The Nanotechnology Study of the most indispensable agent of basic war, the Warrior, will give insight into violence and improve our psychological preparations for war. The psychoneurobiologic basis of VIOLENCE is discovered, leading to violence control capabilities.
- In 2010, the "violence gene" is discovered and, with genetic engineering, is minimized in humans.
- Bionic replaceable human parts are readily available, so loss of limb is not debilitating (the replacement limb is superior).
- Euthanasia, with individuals' approval, is now legal, and "permanent sleep tablets" are an over-the-counter item.
- The principal concerns of the medic-warriors are cyberwar devices which render their mobile tools ineffective and new variants of biologic or chemical threats which kill or injure before computer diagnostics can make accurate identification and conduct intervention. Some of these problems are solved by personalized training chips which are surgically implanted within each medic-nurse-physician (a combined function in 2020).

- The introduction of DNA as the sole medical entry standard in 2005 essentially eliminated any requirements for active duty health care. This, along with the integration of android technology, enabled the draw down of GMHSS personnel to less than 5,000.

## APPENDIX B. FIRMS

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At the outset of the project, it was decided that participants in a cyber-conference environment would use the MetaNet conference Internet site to exchange information. Users would logon to various workgroups and add comments and ideas from various geographical areas, with the result being a collection of related thoughts. These thoughts would then be logically grouped to help solidify the content and context, and would be incorporated into a document that summarized and presented the various views that the users had collectively come to agree could represent the future of health care.

This process was originally going to be accomplished manually. It was then proposed that the process of retaining, re-formatting, and displaying the results of the conversations be done using an automated tool set and relational database. This document describes the automated tool set that has become known as the Futures Information Relationship Modeling System (FIRMS).

FIRMS is a three-part system that allows conversation pieces to be modeled, stored, and displayed graphically. The input to the system is the text of conversations that are transpiring on the MetaNet conference Internet site. Data from the MetaNet is downloaded several times a week and imported into the FIRMS database. Systems Research and Applications Corporation's (SRA's) research analysts dissect the conversations into conversation models. Once the modeling is complete, the data can be viewed graphically using the FIRMS Graphical Interface. The graphical representation of the conversation models not only helps the research analysts in assessing the success of the on-line conference, but also helps the conference participants understand how their conversations are being interpreted and used in the models.

In the first phase of the project, the participants were asked specifically to generate key forces, forecasts, visions, and leverage areas within their areas of expertise. This phase was primarily an exercise to assist the participants in thinking about the future of health care. In the second phase, the participants' conversations were more structured. Four potential futures

(known as scenarios) were discussed and each workgroup had specific topics, or areas of discussion, to address. The narrowing of the on-line discussions was necessary in order for the final report and graphical output to be successfully completed by the end of the project. Additionally, while the participants may have found the structure of Phase II to be limiting, it allowed them to focus on the issues that were most relevant when considering the future of health care.

## APPENDIX C. SIM MODELS

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The Sim2020 Model is a descriptive, interactive, dynamic simulation model of a health care system. Using a baseline set of conditions and relationships reflecting health care delivery today in the Military Health Services System (MHSS), the model supports analysis and provides insight into the future evolution of the system. The model is designed not to be prescriptive—that is, not to provide an ultimate solution—but rather to help the user develop a greater understanding of the relationships between initial conditions and end states.

The purpose for developing the Sim2020 model is twofold: to serve as a learning tool for health policy decisionmakers and to aid the MHSS 2020 project. MHSS 2020 is a 12-month, Tri-Service research project to explore future trends in health care and develop scenarios for health systems for the year 2020. The Sim2020 model supports this effort by capturing system relationships identified by the MHSS 2020 participants and demonstrating the sensitivity of identified leverage areas in the various scenarios as developed. Because MHSS 2020 is a work in progress, the model is always in flux.

Version 1.3 of the model was refined as new relationships were identified during the MHSS 2020 project. Version 1.3 was developed using iThink simulation v3.06 software from High Performance Systems. The developers selected dynamic simulation over other modeling techniques because it is the best approach for capturing the unique features of a complex system. Complex systems are comprised of high-order, multiple-loop, nonlinear feedback structures, and their behavior depends on the actions of many subsystems. Consequently, complex systems are characterized by the following features:

- *counter intuitive*: cause and effect are distant in time and space
- *resistant to policy changes*: typically a one-step level response
- *multiple leverage points*: high sensitivity to a few parameters that are often difficult to identify

- *system counteraction*: compensating counteraction resists applied forces; better results occur by modifying structural incentives
- *long-term vs. short-term*: trends tend to become worse before they finally improve in response to corrective action
- *tendency to drift to low performance*: short-term corrections turn bad, followed by a redoubling effect of the original bad decision.

Within the interactive environment of the simulation model, users have the opportunity to learn more about the sometimes chaotic and counter-intuitive workings of a complex system. Users can identify where the areas of leverage are located in the system and how they react over time to various policy, technology, or resource changes.

Another approach taken by the SIM 2020 developers was to include all relationships deemed important to the operation of the system, even if the confidence levels of those relationships were low. The inclusion of such relationships tends to provide better results than if they are excluded. For this reason, the model was developed with a deep structure with multiple relationships. Experts from the MHSS 2020 have provided enhancements to these and all relationships currently in version 1.3 of the model. The model's deep structure permits better support sensitivity and scenario analyses.

## APPENDIX D. HOME PAGE

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**HomePage**

<http://keydet.sra.com/hs2020/homepage/hs2020.htm>

For those who don't know, **MHSS 2020** has a homepage to support the needs of the Conference participants. This homepage contains a Document Repository, Clipping Service, Symposium graphics/information and access to the Grateful Med Search Engine, a Membership Database of all conference participants and Cybernauts, the FIRMS database modeling structure, plus the new 21st Century Warfare site and much more!

*Here's a taste of what the MHSS 2020 Homepage has to offer . . .*

- **Document Repository:** The Document Repository contains many services that can provide assistance in the field of research for the **MHSS 2020** Conference Participant.
- **MHSS 2020 Articles** - Have you published or read an article that you would like the world to see? This option allows the Conference participants to read published articles on health and medically related issues. E-mail the webmaster with any book/articles that you would like submitted.
- **Book/Article Reviews** - Have you just read a great article that you'd like to share with your colleagues in the field of health and medicine? This option allows the Conference Participant to submit a review from a health related article or book that they have read. This type of resource not only provides all participants with information about an article to research and enjoy, but it also allows the authors to express their views outside of the on-line working group discussions. These reviews spark interesting conversations inside the working group's discussions, and they also keep people informed of the latest health articles available.
- **Notable Forecasts** - Look into the crystal ball and see the future of health in 2020! This option allows any Conference Participant to post a Health Futures

Forecast for the year 2020. Any health related methodology, technology, idea, or breakthrough that will affect the future of Health and Medicine is welcome here.

- **Graphics Repository** - Have any presentations or graphics that you want to share with other health conscious representatives? Have you just given a speech or presentation and would like to share the concepts with others? Show off your artistic talents here.
- **Other Web Sites** - **MHSS 2020** has compiled a list of Medically Related Web Sites that can be used for either resource or fun! Know of a web site that would be beneficial to other conference participants? Post it here by e-mailing the webmaster!
- **Clipping Service:** Do you like to keep abreast of the latest articles published by magazines and newspapers? The commercial clipping service *Individual* offers the **MHSS 2020** Conference participants approximately 17,000 daily journals, news clippings and other articles which can be searched and indexed by the user.
- **Grateful Med Search Engine:** **MHSS 2020** makes researching fun and easy with The Grateful Med Search Engine! This powerful tool is provided through the National Library of Medicine and enables the participants to perform their own medically related searches. First obtain a User ID and Password from your supporting librarian and then get ready to research!
- **MHSS Symposiums:** Remember the good times we shared at the February Symposium at WestFields? Re-live the memories and the interesting speeches/presentations given by colleagues in the field of Health Futures. This page holds the agenda, presentations, and graphics from the last Symposium, and is now the one-stop page for information about the September Symposium! Count down with **MHSS 2020** to the September Symposium, as we keep up-to-the-minute information on the web!
- **Membership Database:** Would you like to see the name with the face? Check out the **MHSS 2020** Membership Database and get e-mail addresses, phone

numbers, and photos of conference participants, colleagues, SRAers, and members of the support staff!

- The **Futures Information Relational Modeling System (FIRMS)** provides a semantic model of key forces, leverage areas, visions, forecasts and their relationships. Beneath these four major items there are related positions, arguments, and references. Over time, both the relational database and the graphic user interface will be available in this repository.
- **21st Century Warfare:** This site explores the different World Wide Web sites dedicated to 21st Century Warfare, including links to National Laboratories web pages, and articles written on the Future of Warfare. Other links are welcome, so e-mail the webmaster to list a site!

In addition to the resources provided by the **MHSS 2020** Homepage, there is a Frequently Asked Questions (FAQ) page. Participants simply e-mail the **MHSS 2020** staff their question or comment whether it be technical, process or World Wide Web related. The questions will be researched by **MHSS 2020** support staff and the answer will be posted on the same page!

Enter the Webcaucus through the keyhole on the **MHSS 2020** Homepage to access the **MetaSystems** Webcaucus. After entering a personal user ID and password, users reach the Welcome Page of the MetaSystems Webcaucus, where all of the working groups discuss new ideas and topics for the future of health and medicine.

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## APPENDIX E. MEMBERSHIPS

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### MHSS Advisors and Working Group Participants

#### Senior Advisors

Col Arthur E. Aenchbacher \*\*\*  
COL Scott Beaty  
Col James M. Benge  
LTC Dale Brown  
CAPT M. Jane Markley  
CAPT John A. Mitas  
CAPT David Morton \*  
MAJ Suzanne R. Pieklik  
Ms. Jacqueline L. Pomeroy  
RADM William R. Rowley  
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Dr. Richard Southby  
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\* Retired January 1996

\*\* Retired August 1996

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Lt Col Jacqueline Hale  
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Lt Col Stephen L. Chambers  
Dr. Terry Clemmer  
Dr. William Cordell  
COL Hal Cragun  
Col (SEL) Paul E. Gilliam  
CM Sgt Richard Muterspaugh  
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Dr. Bruce M. Brock  
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Col Brien W. Dyer  
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Mr. Christopher Lalonde  
LTC David T. Orman  
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Mr. Paul Rothman  
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## APPENDIX F. ACROYNM LIST

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ASD	-	Assistant Secretary of Defense
AWOL	-	Absent without Leave
BP	-	Blood Pressure
BPR	-	Business Process Re-engineering
C3	-	Command Control and Communications
CAI	-	Computer Assisted Instruction
CHAMPUS	-	Civilian Health and Medical Program of the Uniformed Services
CONUS	-	Continental United States
DDS	-	Doctor of Dental Science
DHP	-	Defense Health Program
DMS	-	Defense Medical Service
DoD	-	Department of Defense
DOPS	-	Department of Protective Services
E-4	-	Enlisted Member, Grade 4
FEHBP	-	Federal Employees Health Benefits Program
FEMA	-	Federal Emergency Management Agency
GCAHP	-	Global Commission on Accreditation of Health Practice
GMHSS	-	Global Military Health Services System
HHS	-	Health and Human Services

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HL7	-	Consortium Formed to Develop Inter-application Message Standards for Healthcare
HOOTW	-	Health Operations Other Than War
IEMA	-	International Emergency Management Agency
IRMs	-	International Rescue Missions
ISDN	-	Integrated Service Delivery Network
LRC	-	Limited Regional Conflicts
ITRO	-	Inter-Service Training Review Organization
MACU	-	Mobile Ambulatory Care Units
MEDCAP	-	Medical Capabilities
MHSS	-	Military Health Services System
MILSPACOM	-	Military Space Command
MD	-	Medical Doctor
MRC	-	Major Regional Conflict
MTF	-	Military Treatment Facility
NGO	-	Non-Governmental Organizations
NHO	-	National Health Organization
OASD	-	Office of the Assistant Secretary of Defense
OCHAMPUS	-	Office of the Civilian Health and Medical Program of the Uniformed Services
OCONUS	-	Overseas (from) Continental United States
OHI	-	Other Health Insurance

OOTW	-	Operations Other Than War
OTAD	-	Other Than Active Duty
PA	-	Physician's Assistant
PC	-	Primary Care
PHM	-	Primary Health Manager
POM	-	Program Operating Memorandum
PPBS	-	Planning Programming and Budget System
RHRRBS	-	Regional Healthcare Resource Requirements Budgeting System
RMRF	-	Rapid Medical Response Force
RN	-	Registered Nurse
TITLE X	-	U.S. Code of Federal Law Directing Healthcare Beneficiary Status
TM	-	Transcendental Meditation
TRICARE	-	Tri-Service Managed Care Program
TSO	-	TRICARE Support Office
UHSC	-	Unified Health Services Command
UMHS	-	Unified Military Health System
UNHSS	-	United Nations Health Services System
USTF	-	Uniformed Services Treatment Facilities
USUHS	-	Uniformed Services University of the Health Sciences
VO2 MAX TEST	-	Volume of Oxygen Maximum Capacity Test

VR

- Virtual Reality

# CONFERENCE MATERIAL

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## FUTURES SYMPOSIUM

September 15 - 18, 1996

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### AGENDA

#### DAY 1

##### SUNDAY, SEPTEMBER 15, 1996

0001 - 1700	Arrival
1200 - 2000	Registration Room(s): Outside North 3
1500 - 2000	Viewing of Futures Exhibits Room(s): B, C, D
1700 - 1900	Exhibitor-hosted Symposium Kick-off Reception and Welcoming Remarks by <i>RADM William R. Rowley, MC, USN</i> Room(s): Assembly Foyer

##### ATTIRE

Sunday attire for all participants is casual civilian. The conference area for Monday through Wednesday is designated as a "no hat" area. The attire for Army personnel is the duty uniform (Class B), without covers. For Air Force personnel, the duty uniform with the tie/tab is required; covers are not required. For Navy personnel, the attire is khakis for working conference participation. The attire for Civilian personnel is business attire. Military presenters are requested to wear Class A. Dress for the Monday dinner is duty uniform or appropriate civilian attire.



**Sunday, September 15, 1996**

**Exhibitor-hosted Symposium Kick-off Reception**

**1700 - 1900**

***Mushroom Quesadillas***

Served with two Salsas

Gringo Green Salsa & Nuclear Orange Salsa

***Spanakopita***

***Mini Quiche Lorraine***

***Chicken Fingers***

***Assorted Rolled Finger Sandwiches***

***Display of Fresh Crudite***

Served with Light Dipping Sauce

**CASH BAR**

Cocktails	\$4.00
Domestic Beer	\$4.00
Imported Beer	\$4.00
Wine	\$4.00

# AGENDA

## DAY 2

### MONDAY, SEPTEMBER 16, 1996

0700 - 0745	Continental Breakfast Room(s): Assembly Foyer
0700 - 1700	Administration and Registration Room(s): Outside North 3
0700 - 0800	Viewing of Futures Exhibits Room(s): B, C, D
GENERAL SESSION: NORTHS 1-3 AND SOUTH	
0800 - 0900	Introduction and Overview: Symposium Goals and Agenda by <i>RADM William R. Rowley, MC, USN and Mr. Robert Olson</i>
0900 - 0930	Highlights of the MHSS 2020 Scenarios
0930 - 1000	Break and Viewing of Futures Exhibits Room(s): Assembly Foyer and B, C, D
1000 - 1130	Immersion in the World of 2020 by <i>Clement Bezold, Ph.D., Mr. Robert Olson and Mr. Jonathan Peck</i>
1130 - 1300	Lunch (unhosted) and Viewing of Futures Exhibits Hotel Restaurants: Cafe Brasserie and The Quarter Deck Other Restaurants: Subway at Henderson Hall, Food Court at Pentagon City Fashion Center
1300 - 1500	Vision for Military Medicine in the 21st Century by <i>Mr. Roger Fritz, President, Leadership by Design</i>
1500 - 1530	Break and Viewing of Futures Exhibits Room(s): Assembly Foyer and B, C, D
1530 - 1700	Developing Preliminary Shared Visions for MHSS by <i>Mr. Roger Fritz, President, Leadership by Design</i>
1700	End of Session
1700 - 1830	Viewing of Futures Exhibits Room(s): B, C, D
1700 - 2100	Reception immediately followed by Dinner and Keynote Speaker <i>Stephen C. Joseph, MD, MPH, Assistant Secretary of Defense for Health Affairs</i> Room(s): Assembly Foyer, Norths 1-3 and South



\* Dinner Coupon Required

**Monday, September 16, 1996**

**Reception followed by Dinner and Keynote Speaker**

**Stephen C. Joseph, MD, MPH**  
**Assistant Secretary of Defense for Health Affairs**

**1700 - 2100**

**Reception**

*Display of Fresh Crudite  
International and Domestic Cheese Display  
Spring Rolls*

**Dinner Buffet Menu**

*Caesar Salad*

*French Rolls with Butter and Margarine*

\*\*\*\*\*

*Garden Fresh Salad with Dressings*

*Limestone Lettuce with Hearts of Palm, Mandarin Oranges and Strawberries*

*Tossed with Orange Vinaigrette*

*Tomato and Fresh Mozzarella Salad with Fresh Basil*

\*\*\*\*\*

*Grilled Breast of Chicken with Wild Mushroom Sauce*

*Mahi Mahi*

*Beef Medallions with Madeira Sauce*

\*\*\*\*\*

*Rice Pilaf*

*Steamed Red and White Potatoes*

*Tossed in Herbs and Virgin Olive Oil*

*Ratatouille*

*Broccoli and Cauliflower*

*Glazed Baby Carrots*

\*\*\*\*\*

*Assorted Jell-O's with Whipped Cream*

*Chocolate and Strawberry Mousses*

*Cherry Cheese Cake with Cherry Sauce*

*Fresh Fruit Cup*

\*\*\*\*\*

*Freshly Brewed Regular and Decaffeinated Coffee, Assorted Herbal Teas and Iced Tea*

*Cash Bar*

# AGENDA

## DAY 3

### TUESDAY, SEPTEMBER 17, 1996

0700 - 0745      Continental Breakfast  
Room(s): Assembly Foyer

0700 - 1700      Administration and Registration  
Room(s): Outside North 3

0700 - 0800      Viewing of Futures Exhibits  
Room(s): B, C, D

GENERAL SESSION: NORTHS 1-3 AND SOUTH

0800 - 0815      Opening and Overview by *RADM William R. Rowley, MC, USN*

0815 - 1000      Envisioning the Best for Military Medicine in the 21st Century by  
*Clement Bezold, Ph.D., Mr. Robert Olson and Mr. Jonathan Peck*

1000 - 1030      Break and Viewing of Futures Exhibits  
Room(s): Assembly Foyer and B, C, D

1030 - 1130      Visions, Strategy, and Implementation:  
Strategic Implications for Military Medicine by  
*Clement Bezold, Ph.D., Mr. Robert Olson and Mr. Jonathan Peck*

1130 - 1300      Lunch (unhosted) and Viewing of Futures Exhibits  
Hotel Restaurants: Cafe Brasserie and The Quarter Deck  
Other Restaurants: Subway at Henderson Hall, Food Court at Pentagon City  
Fashion Center

1300 - 1500      Strategic Implications for Military Medicine (continued)

1500 - 1530      Break and Viewing of Futures Exhibits  
Room(s): Assembly Foyer and B, C, D

1530 - 1700      Strategic Implications for Military Medicine (continued)

1700      End of Session

1700 - 1900      Viewing of Futures Exhibits  
Room(s): B, C, D

# AGENDA

## DAY 4

### WEDNESDAY, SEPTEMBER 18, 1996

0700 - 0745      Continental Breakfast  
Room(s): Assembly Foyer

0700 - 1200      Administration and Registration  
Room(s): Outside North 3

GENERAL SESSION: NORTHS 1-3 AND SOUTH

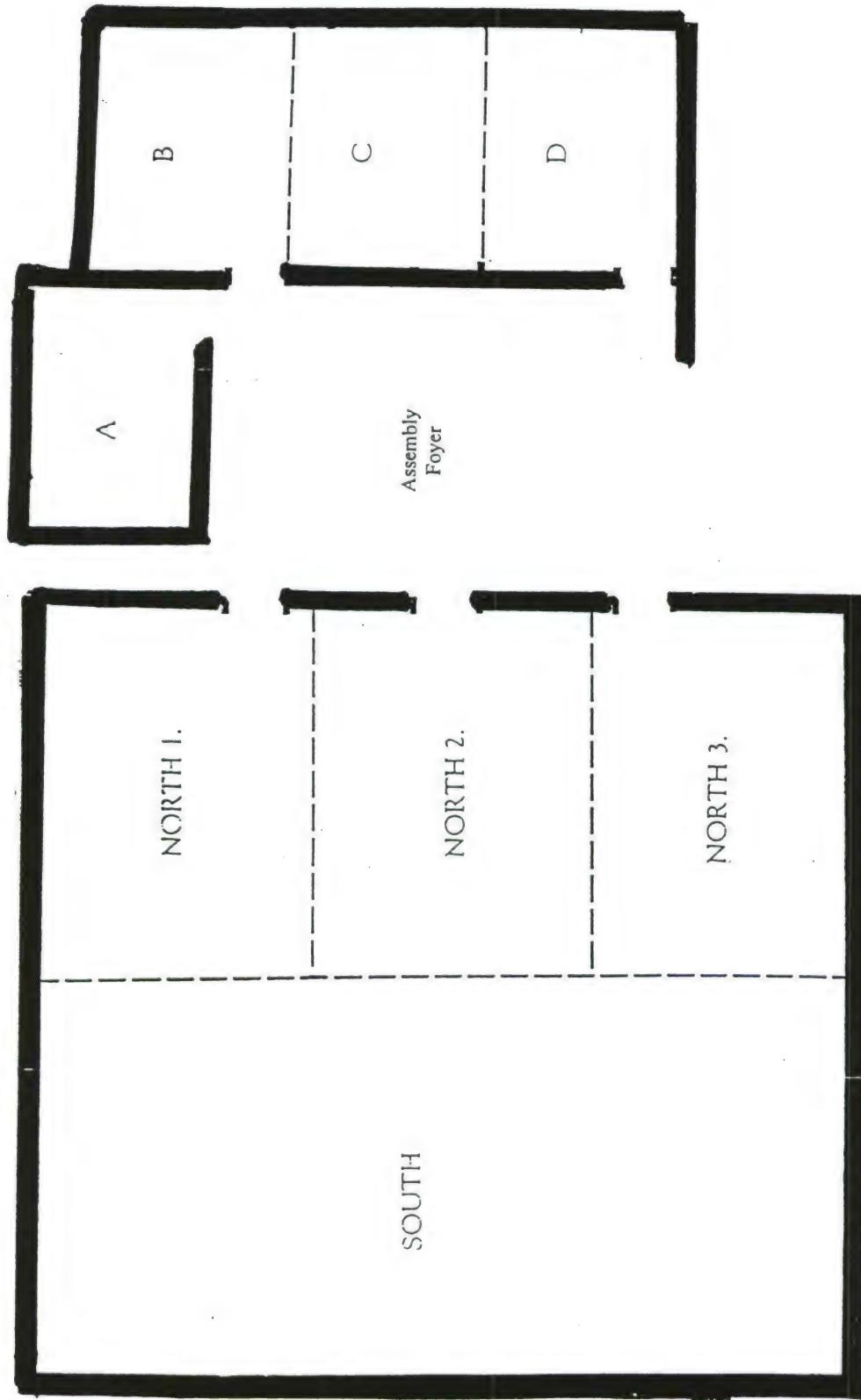
0800 - 0815      Overview by *RADM William R. Rowley, MC, USN*

0815 - 1000      Highest Priority Short-Term Actions (1998) by  
*RADM William R. Rowley, MC, USN and Clement Bezold, Ph.D.*

1000 - 1130      Ensuring a Futures Focus for Military Medicine by  
*RADM William R. Rowley, MC, USN, Clement Bezold, Ph.D. and  
Mr. Edward R. Ponatoski*

1130 - 1200      Concluding Activities

## Hotel Layout



Foyer

## Sheraton National Hotel

Columbia Pike & Washington Blvd.

Arlington, VA 22204

Phone: (703) 521-1900; (800) 468-9090

FAX: (703) 521-2122

## BIO

Stephen C. Joseph, M.D., M.P.H., was nominated by President Clinton to be Assistant Secretary of Defense for Health Affairs on November 20, 1993, and confirmed by the Senate on March 22, 1994.

As assistant Secretary of Defense for Health Affairs (ASD(HA)), Dr. Joseph is responsible for overall supervision of the health and medical affairs of the Department of Defense (DoD). He serves as the principal staff assistant and advisor to the Secretary of Defense for all DoD health policies, programs, and activities and, subject to the direction of the Secretary of Defense, exercises oversight of all DoD health resources.

The primary mission of the ASD(HA) is to ensure the nation has available at all times a healthy fighting force supported by a combat ready health care system. The ASD(HA) is responsible for providing a cost effective, quality health benefit to active duty members, retirees, survivors, and their families. The ASD(HA) carries out the medical readiness and health care delivery responsibilities to over 8.5 million DoD beneficiaries through a 15.2 billion dollar health care system consisting of a worldwide network of 130 hospitals, over 500 medical and dental clinics, and the Department's civilian sector health benefits cost sharing program.

Dr. Joseph was born in New York City, New York on November 25, 1937. A graduate of Harvard College (1959), Dr. Joseph received his M.D. from Yale University School of Medicine (1963) and his M.P.H. from Johns Hopkins School of Hygiene and Public Health (1968). He served his internship and residency in Pediatrics at the Boston Children's Medical Center.

Prior to his appointment, Dr. Joseph served as Dean of the School of Public Health, and Professor of Public Health and Pediatrics at the University of Minnesota. He previously served as the Commissioner of Health of New York City.

Before joining the New York City Department of Health, he served as Special Coordinator for Child Health and Survival for the United Nations Children's Fund. In addition, Dr. Joseph was Chief of Pediatrics at Grenfell Regional Health Services in Newfoundland. He has also worked as a physician at Children's Hospital in Boston, at the Children's Hospital Center of the District of Columbia, and with the Agency for International Development in Central Africa and in Washington. He was a Peace Corps Physician in Nepal for two years during his five year term as a Commissioned Officer with the United States Public Health Service.

**STEPHEN C. JOSEPH**  
**THE HONORABLE**

**ASSISTANT  
SECRETARY  
OF  
DEFENSE**  
**HEALTH  
AFFAIRS**

## BIO

Dr. Joseph was also Director of the Neighborhood Health Centers Program at the Office of Economic Opportunity, Director of the Office of International Health Programs at the Harvard School of Public Health, and Special Assistant to the Assistant Secretary for Health and Scientific Affairs at the United States Department of Health, Education and Welfare. He has held faculty positions at Harvard University, The University of Health Sciences in Cameroon, and the Memorial University of Newfoundland.

Among his numerous awards and honors, Dr. Joseph holds the Outstanding U.S. Alumnus Award for Public Health Leadership from Johns Hopkins School of Public Health, the Hermann Biggs Award of the New York State Public Health Association, and the Public Service for Medicine Award, American College of Physicians (NY).

Dr. Joseph's professional affiliations include being an elected member of the National Academy of Sciences Institute of Medicine, and the Johns Hopkins University Society of Scholars. He is also a Fellow of the American Academy of Pediatrics and the American Public Health Association, of which latter organization he is a former Chairman of the Executive Board. He is a frequent writer and speaker on public health issues. His book, "Dragon Within the Gates: The Once and Future AIDS Epidemic," was published by Carroll and Graf in September of 1992.

He is married to Elizabeth Preble, an international health specialist, and is the father of two daughters, Denise Ellen, a computer software buyer for a Cambridge based company, and Tara Anne, a London based journalist. Dr. Joseph and Beth Preble reside in Arlington, VA.

**STEPHEN C. JOSEPH**  
**THE HONORABLE**

**PAGE 2 OF 2**

Charles Monfort was appointed as the Deputy Assistant Secretary of Defense (Health Affairs) for Policy and Planning Coordination in October 1994. Mr. Monfort acts as the principal staff assistant and advisor of the Assistant Secretary of Defense (Health Affairs) on policy consistency. The Office of Policy and Planning Coordination is responsible for management of Health Affairs interactions with the US Congress and the media, coordination of TRICARE Executive Committee activities, strategic planning, policy evaluation and TRICARE marketing.

Prior to coming to the Department of Defense, Mr. Monfort served as Legislative Director and Appropriations Associate for US Representative Martin Olav Sabo (D-MN), Chairman of the House Budget Committee. In that position, Mr. Monfort advised Rep. Sabo on all aspects of legislative operations, with emphasis on defense, foreign policy, international trade, and science and technology. Mr. Monfort was directly responsible for Rep. Sabo's work as a Member of the Appropriations Subcommittee on Defense, which oversees the DoD budget.

From 1982 to 1989, Mr. Monfort was Washington Director of the Union of Concerned Scientists, a national public interest group involved in the impact of advanced technology on society. Prior to working at UCS, Mr. Monfort was the Legislative Director for US Representative Morris K. Udall (D-AZ).

Mr. Monfort has a Bachelor of Arts degree (Political Science) from the University of Arizona and a Master of Arts degree (International Affairs) from George Washington University. He is married and has two young children.

## CHARLES A. MONFORT

DEPUTY  
ASSISTANT  
SECRETARY  
OF  
DEFENSE  
(HEALTH AFFAIRS)  
FOR  
POLICY  
AND  
PLANNING  
COORDINATION

HEALTH  
AFFAIRS

## BIO

Rear Admiral Rowley, MC, USN, grew up in Owatonna, Minnesota and attended the University of Minnesota where he received a Bachelor of Arts Degree in Psychology in 1966 and a Doctor of Medicine Degree in 1970. He served an internship and first year of general surgery residency at the University of California, San Diego before joining the Navy in 1972. After being a shipboard medical officer on USS Tripoli (LPH 10), he completed his general surgery training at the Naval Regional Medical Center in Philadelphia. In July 1977 he transferred to the Naval Regional Medical Center, San Diego for a one year peripheral vascular surgery fellowship. He stayed on in San Diego as a staff vascular surgeon and later served as Division Head, Director for Vascular and General Surgery Residency Programs, Department Head and Director of Surgical Services. After a brief tour as Assistant Chief of Staff for Plans and Operations at Naval Medical Command, Southwest Region, he became the Deputy Commander at the National Naval Medical Center, Bethesda, Maryland in 1989. From 1991 to July 1993 he served as Commanding Officer of Naval Hospital, Camp Pendleton, California. He then went to the Bureau of Medicine and Surgery in Washington, DC as Deputy Assistant Chief for Healthcare Operations followed by Assistant Chief for Plans, Analysis and Evaluation. Rear Admiral Rowley reported to his current assignment as Commander, Naval Medical Center, Portsmouth, Virginia and Lead Agent of Tricare Region Two in July 1995. He is the Chairman of the Military Health Services System 2020, a Department of Defense Health Affairs study looking at the future of military medicine 25 years from now.

**WILLIAM R. ROWLEY**  
**REAR**  
**ADMIRAL**

**COMMANDER**  
**NAVAL**  
**MEDICAL**  
**CENTER**  
**PORTSMOUTH,**  
**VIRGINIA**  
**AND**  
**LEAD**  
**AGENT**  
**OF**  
**TRICARE**  
**REGION**

## BIO

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Lieutenant Colonel Dale Brown, Ph.D., was born in Flint, Michigan, in 1950, but raised through his primary school years in Imperial Beach, California, the most southwesterly city in the United States. He joined the Army as an enlisted soldier in 1968. After completing infantry, airborne and special forces training, he served first with the 7<sup>th</sup> Special Forces Group, Ft. Bragg, and then as a weapons and reconnaissance NCO with the 5<sup>th</sup> Special Forces Group in Viet Nam. After completing active-duty, LTC Brown completed a Bachelor's Degree in Experimental Psychology at the University of California, Santa Barbara, and then returned to the Army in 1976 for a commission through the Officers Candidate School, Ft. Benning, Georgia. He was first commissioned as a combat engineer officer and served with the 2<sup>nd</sup> Engineer Battalion, Korea, and the 4<sup>th</sup> Engineer Battalion, Ft. Carson, Colorado. He then transferred to the Medical Service Corps, first as a health care administration officer and then as a health facility planner. While on active-duty he completed a Masters Degree in Health Care/Business Administration, and a fully-funded Ph.D. in Architecture from the University of California, Berkeley. He is a graduate of the Army Corps of Engineers Officer Basic Course, Army Medical Department Advance Course, CAS<sup>3</sup> and the Army Command and General Staff College.

In addition to those mentioned above, Lieutenant Colonel Brown's previous military assignments include: administrator for the departments of Surgery, OB/GYN and Pediatrics, Letterman Army Medical Center; the Chief, Health Facility Project Office, new Ft. Stewart Hospital project; the Assistant Chief, Health Facility Project Office, new Tripler Army Medical Center project; the Chief, Health Facility Project Office, new Womack Army Medical Center project; and the Chief, Design and Development Branch, Health Facility Planning Agency. He assumed his current position as Commander, USAHFPA, in March 1996.

Lieutenant Colonel Brown's military honors and awards include: Bronze Star; Air Medal; Meritorious Service Medal with three Oak Leaf Clusters; Army Commendation Medal with six Oak Leaf Clusters; Humanitarian Assistance Medal; Expeditionary Forces Medal; Overseas Ribbon; Enlisted Good Conduct Medal; Combat Infantry Badge; Expert Field Medical Badge; Special Forces Tab; American and Viet Nam Parachute Badges; "A" Proficiency Designator; Order of Military Medical Merit; and the Charles E. Christ Award for Health Facilities Acquisition.

**DALE R. BROWN**  
**LIEUTENANT**  
**COLONEL**

**COMMANDER**  
**US ARMY HEALTH**  
**FACILITY**  
**PLANNING**  
**AGENCY**  
**(USAHFPA)**

**MEDICAL SERVICE CORPS**

## BIO

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Ed Ponatoski is a senior consultant with Systems Research and Applications International (SRA). Mr. Ponatoski has over 22 years of successful management and leadership experience in health services management and health facility planning. He has a strong background in health policy development, analysis of complex health systems, and use of quantitative analysis as a management decision-making tool.

Mr. Ponatoski is currently the project manager for Military Health Services System 2020, a study that is attempting to define military health for the 21st century. He has also served as the team leader for SRA's strategic business planning in support of the new Armed Forces Medical Research Laboratory at Forest Glen, Maryland.

Prior to joining SRA, Mr. Ponatoski held key positions in both the Department of Defense (DoD) and the US Army. In his capacity as Director of Strategic Planning for the Office of the Assistant Secretary of Defense (OASD) for Health Affairs, he acted as an internal consultant for the Military Health Services System Strategic Planning Committee. Mr. Ponatoski developed and implemented processes that allowed senior executives to effectively address issues of system-wide strategic importance. He also managed the development and implementation of a major analytical study designed to determine the capacity, health care requirements, and physical plant infrastructure to support the DoD medical mission.

As the Director of Health Facility Programming and Planning within OASD Health Affairs, Mr. Ponatoski managed the program development, facility planning, and execution of all medical construction projects for the Department of Defense. While assigned as the Chief, Project Management Branch, of the US Army Health Facilities Planning Agency, he managed the execution of over \$650 million of medical construction projects and was instrumental in reducing system-wide cost growth from 12% to less than 5%.

Mr. Ponatoski holds a Masters in Health Services Administration from Baylor University and a Bachelor of Arts degree in Psychology from the University of Georgia. He is a diplomat in the American College of Healthcare Executives.

### EDWARD R. PONATOSKI

SENIOR  
CONSULTANT

SYSTEMS  
RESEARCH  
AND  
APPLICATIONS  
INTERNATIONAL

## BIO

Clement Bezold, Ph.D., is the Executive Director of the Institute for Alternative Futures and President of Alternative Futures Associates.

Dr. Bezold is a leader in helping organizations and communities more wisely choose and create the future they prefer. This unusual job has led him and his organization to work with local, state, national and international governments from Peoria to the World Health Organization (WHO); with associations and community groups from Ocala to AARP and with companies from Disney to AT&T, including 22 of the largest global 100 companies.

He has accurately forecast developments in several key industries, particularly health and information and he has pioneered in the use of visioning techniques to more creatively choose the future we want to create.

Dr. Bezold established the Institute for Alternative Futures with Alvin Toffler to encourage "Anticipatory Democracy." He works closely with state and local governments in their efforts to involve the public in strategic planning. He has worked with the governor or state legislatures in Hawaii, Florida, California, Connecticut, Colorado, and Kentucky.

Dr. Bezold received his Ph.D. in Political Science from the University of Florida, where he was also the Assistant Director of the Center for Governmental Responsibility. For several years he was a Visiting Scholar at the Brookings Institution, and has taught at American University, the University of Florida and Antioch University.

Dr. Bezold has authored or edited several books, including Anticipatory Democracy, The Future of Pharmaceuticals, Judging the Future: Alternative Futures and the Legal System, and 2020 Visions: Health Care Information Standards and Technologies. His book, The Future of Work and Health (co-authored with Rick Carlson and Jonathan Peck), received American Health Magazine's book award. He has written articles for magazines such as The Futurist, Business and Health, Modern Health Care, Group Practice Journal, Healthcare Forum Journal, and Drug Information Journal.

### CLEMENT BEZOLD

**EXECUTIVE  
DIRECTOR/  
PRESIDENT**

**INSTITUTE  
FOR  
ALTERNATIVE  
FUTURES  
AND  
ALTERNATIVE  
FUTURES  
ASSOCIATES**

## BIO

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Jonathan Peck is Managing Director of the Institute for Alternative Futures (IAF) and Vice President of Alternative Futures Associates (AFA). Trained as a political scientist and futurist, he does a wide range of consulting, speaking and facilitation.

In his work at IAF, Mr. Peck designs and directs research programs and projects that help a variety of organizations use futures studies. He directs the IAF Foresight Seminars on Pharmaceutical Research and Development, a program designed to help Congress look forward more effectively as it forms health policy. Mr. Peck has also worked extensively with the pharmaceutical community, developing a variety of conferences and seminars. He has helped plan and organize industry conferences on the future for the Drug Information Association, the Food and Drug Law Institute, the Pharmaceutical Research and Manufacturers Association, the National Pharmaceutical Council, and the Wholesale Druggists Association. His scenarios on the future have provided centerpieces for such conferences and have been used extensively by corporations in their strategic planning.

Mr. Peck is a popular speaker and a consultant to a large number of organizations. As a member of The World Future Society and the World Futures Studies Federation, he has been a speaker at their professional meetings and conferences on the future. He has also been the keynote speaker for conferences in a wide variety of other fields, including health, mental health, education and government. He has made presentations to such groups as the National Conference of State Legislators, The Missouri Opportunity 2000 Commission, and has consulted with Missouri's "Show Me Health Care Reform" effort. Along with his writing and speaking, Mr. Peck has taught futures courses and lectured at high schools and colleges. Mr. Peck has also designed conferences and futures projects in other areas, many related to health care. He was the director of IAF's facilitation of a major project on the future of mental health for the National Mental Health Association. He also helped organize a project on the future of work and health, conducted in conjunction with the U.S. Department of Health and Human Services. Other futures projects outside the health field have covered topics as diverse as consumer education, human resources, national disasters, work and information technologies. Clients have included the U.S. Army Corps of Engineers, Lions Club International and a wide variety of corporations and associations.

Mr. Peck received his Masters degree at the Futures Studies Program in the Political Science Department of the University of Hawaii. Articles written or co-authored by Mr. Peck have appeared in such publications as Pharmaceutical Executive, Food Drug Cosmetic Law Journal, Business and Health, Journal of Geriatric Drug Therapy, Mobius and The Futurist. He is also co-author of a major book The Future of Work and Health which won American Health magazine's award for being one of the ten best books on health. He co-authored a second book, Regulating Change published in December 1989. Along with his books and articles, Mr. Peck has produced two videotapes.

### JONATHAN PECK

MANAGING  
DIRECTOR/  
VICE  
PRESIDENT

INSTITUTE  
FOR  
ALTERNATIVE  
FUTURES  
AND  
ALTERNATIVE  
FUTURES  
ASSOCIATES

## BIO

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Robert L. Olson is the Research Director of the Institute for Alternative Futures (IAF) and Alternative Futures Associates (IAF). He is a leading expert in methodologies of strategic planning, scenario development and vision-driven organizational change. He was a founding member of IAF's Board of Directors in 1977.

Mr. Olson helped produce IAF's base scenarios for the future of health care and the pharmaceutical industry, and he has participated in many IAF projects with pharmaceutical companies. He also directs IAF research in the area of telecommunications and computing. Much of his work focuses on the intersection of information technology and health care. He is the lead author of *21st Century Learning and Health Care in the Home: Creating a National Telecommunications Network*, a major report produced in cooperation with the Consumer Interest Research Institute. His recent book, *Mending The Earth*, explores connections between healthful living and environmental sustainability.

Prior to joining IAF, Mr. Olson was a project leader and consultant to the Director at the Office of Technology Assessment of the U.S. Congress. He also served on the central staff of the National Research Council's Commission on Nuclear and Alternative Energy Systems. In a previous period of academic work, he was a Resident Fellow at the Center for Advanced Study at the University of Illinois from 1974 to 1976. He also served as an Assistant Project Director at the University of Michigan's Institute for Social Research, studying the long-range forecasting and planning operations of major U.S. corporations and federal government agencies.

Mr. Olson received M.A. and Ph.C. degrees in Political Science from the University of Michigan. He has continued to develop and teach courses on futures research and strategic planning, working with the University of Maryland, the American University, George Mason University, and the Washington Public Affairs Center of the University of Southern California.

### **ROBERT L. OLSON**

**RESEARCH  
DIRECTOR**

**INSTITUTE  
FOR  
ALTERNATIVE  
FUTURES  
AND  
ALTERNATIVE  
FUTURES  
ASSOCIATES**

## BIO

Roger Fritz is a planning and development consultant with fifteen years of experience in the corporate, not-for-profit, government and higher education sectors. His consulting practice combines organizational planning and development with individual career development. This combination provides a unique perspective on organizational values, vision and mission as they relate to the personal career and life aspirations of people within the organization. He is the founder of Leadership By Design, Inc., LifeWorks, Inc. and the Aspiring Organization™.

He has worked successfully with hundreds of executives, managers and practicing professionals in virtually all career fields. He is recognized as an innovator in the application of psychological type to a broad range of specialties including career and management development, leadership and organizational development, as well as operational planning, strategic planning and visioning. Some current clients include Institute for Alternative Futures, Monsanto Company, IMSA-a division of Dun & Bradstreet, City of Kansas City, Professional Services Marketing Association, and the Bi-State Development Agency.

Prior to founding his consulting practice in 1986, he served in senior executive positions for two of the country's largest planning and design firms, URS, headquartered in San Mateo, California, and Hellmuth, Obata and Kassabaum (HOK), headquartered in St. Louis, Missouri. From these positions, Mr. Fritz gained valuable experience consulting with executives and managers at all levels within organizations such as Edison Brothers Stores, Emerson Electric, Southwestern Bell, Phillips Petroleum, Kellogg's, Burger King, Federal Reserve Bank of Cleveland and Federal Reserve Bank of Charlotte.

His background in strategic planning and career development began in 1977 while serving as Assistant to the President of Columbia College. From this position, he coordinated the strategic and long range planning process for the college and also directed a number of federally funded grant programs including Effective Communication Development and Career Development of Adults.

Mr. Fritz serves as an ongoing consultant to the Institute for Alternative Futures (IAF) in Alexandria, VA. This organization is a leading contributor to current political thought in many crucial areas of social reform. Through IAF Mr. Fritz participates in designing creative future scenarios of social problems such as: advancing acceptable guidelines for a sustainable environment, redesigning healthcare and pharmaceutical delivery systems, stabilizing the future of major societal organizations as they contribute to the future of work and our overall economics systems, and defining the central role information technology will play in all of these areas.

He earned his Master's Degree in Design and Bachelor's Degree in Labor Economics from the University of Missouri. Mr. Fritz is an active member of the National Organization Development Network, World Future Society and Association for Psychological Type.

### ROGER FRITZ

PLANNING  
AND  
DEVELOPMENT  
CONSULTANT

LEADERSHIP  
BY  
DESIGN

## EXHIBITORS/DEMOS

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*Address and Phone of Company:* 500 W. Main Street  
Louisville, KY 40202  
(502) 580-1911

**HUMANA**  
**MILITARY**  
**HEALTHCARE**  
**SERVICES,**  
**INC.**

*Title of Exhibit:* **Ambulatory Chart Reviews**

**COMPANY**  
**REPRESENTATIVES**

*Exhibit Description:* A PC Based System for Reviewing Patient Records Against Quality Standards.

**CATHERINE C. MORRIS**  
**KEVIN LYON**

*Address and Phone of Company:* Medical Advanced Technology Management Office  
USAMRMC  
MATMO, Building 1054  
Ft. Detrick  
Frederick, MD 21702-5012  
(301) 619-2413

**MEDICAL**  
**ADVANCED**  
**TECHNOLOGY**  
**MANAGEMENT**  
**OFFICE**  
**(MATMO)**

*Title of Exhibit:* **DOD Telemedicine**

**COMPANY**  
**REPRESENTATIVES**

*Exhibit Description:* Futures technologies to improve the MHSS.

**REID LINN**  
**MARK SCHNUR**

*Address and Phone of Company:* 6359 Black Walnut Ct.  
E. Amherst, NY 14051  
(800) 737-2088 x. 72105

**MERCK**  
**FEDERAL**  
**HEALTHCARE**  
**AFFAIRS**

*Title of Exhibit:* **Healthier Horizons**

**COMPANY**  
**REPRESENTATIVES**

*Exhibit Description:* Advances in Cardiovascular Medicine,  
New Horizons in Women's Health.

**CHARLES SHEPARD**  
**RON WHITEN, PHARM.D.**

## EXHIBITORS/DEMOS

*Address and Phone of Company:* 2724 North Tenaya  
Las Vegas, NV 89031  
(702) 242-7212

SIERRA  
HEALTH  
SERVICES,  
INC.

*Title of Exhibit:* **Sierra Military Health Services, Inc.**

COMPANY  
REPRESENTATIVES

MICHAEL PHILLIPS  
CYNTHIA DAVEY

*Address and Phone of Company:* PO Box 7929  
Philadelphia, PA 19101  
(215) 751-5650

SMITHKLINE  
BEECHAM  
PHARMACEUTICALS

*Title of Exhibit:* **Smithkline Beecham- Federal Marketing**

COMPANY  
REPRESENTATIVES

STEVE ZELKOSKI  
PATRICK LEONE

*Company Address:* 600 Chennault Circle  
Maxwell AFB, AL 36112  
(334) 953-4962

UNITED  
STATES  
AIR  
FORCE

*Title of Exhibit:* **Air Force 2025**

*Exhibit Description:* Air Force 2025 is a chief of staff directed study to examine concepts, capabilities, and technologies the U.S. will require to remain in the dominant air and space force in the future.

COMPANY  
REPRESENTATIVES

L.T.COL. LARRY L. BOYER  
CAPT. ART RICE

## EXHIBITORS/DEMOS

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*Address and Phone of Company:* 7910 Woodmont Avenue, Suite 450  
Bethesda, MD 20814  
(301) 656-8274

**WORLD  
FUTURE  
SOCIETY**

*Title of Exhibit:* **World Future Society**

*Exhibit Description:* An association of people interested in how social and technological developments are shaping the future.

---

*Address and Phone of Company:* 2000 N. 15<sup>th</sup> Street  
Arlington, VA 22201  
(703) 243-6622

**MHSS 2020  
ON-LINE  
CONFERENCE**  
**METASYSTEMS  
DESIGN  
GROUP**

*Title of Presentation:* **Internet Team & Organization Support**

*Presentation Description:* Strategic Developmental Consulting supported by Internet sites and core conferencing for group conversation.

**COMPANY  
REPRESENTATIVES**

DOUGLAS CARMICHAEL  
LISA KIMBALL

---

*Address and Phone of Company:* 5205 Leesburg Pike, Suite 1300  
Falls Church, VA 22041  
(703) 824-4916

**FUTURES  
INFORMATION  
RELATIONSHIP  
MODEL  
(FIRMS)**  
**SRA CORPORATION**

*Title of Presentation:* **Futures Information Relationship Model (FIRMS)**

*Presentation Description:* This exhibit will display the conversation model used throughout the MHSS 2020 project.

**COMPANY  
REPRESENTATIVES**

JEFF ELLIS

## EXHIBITORS/DEMOS

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*Address and Phone of Company:* 5205 Leesburg Pike, Suite 1300  
Falls Church, VA 22041  
(703) 824-4916

**SIMULATION**  
**2020**  
**SRA CORPORATION**

*Title of Presentation:* **Simulation 2020**

**COMPANY**  
**REPRESENTATIVES**

*Exhibit Description:* SIM 2020 is an economic model used to simulate policy decisions and their potential effects by the year 2020.

**DAVE TYE**  
**ANDY CORNELL**

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## THE MHSS 2020 SCENARIOS

Presentation by  
Robert L. Olson  
Institute for Alternative Futures  
MHSS 2020 Symposium  
September 16, 1996

## THE THIRD WAVE Global Situation

- Shift to Third Wave Economies
- Rapid Global Growth
- Manageable Rich-Poor Tensions
- Accelerating Technological Progress
- Threat of Major Regional Conflict Remains
- More Low-Intensity Regional Conflicts
- Increasing Terrorism

## THE THIRD WAVE U.S. Health System

- Forecast, Prevent & Manage Paradigm
- Telehealth Growth
- Major Biomedical Advances
- Growing Customization of Care
- Vertical Integration
- Improved Health Status

## THE THIRD WAVE Military Health

- Flexible, Light, Mobile Warzone Platforms
- Just-In-Time Logistics
- High-Tech Self-Aid & Field Medic Tools
- HOOTW for Emergencies & Peacekeeping
- Active Duty Members in Direct Care System
- Care for Others Through TRICARE Net

## THE DARK SIDE Global Situation

- Many Poor Nations in a "Death Spiral"
- Rage Against the Rich
- Communist Resurgence
- Conflict in Korea, China-India, Mid-East
- Many More Low-Intensity Conflicts
- Mass Casualties from Frequent Terrorism
- Information Warfare Arms Race

## THE DARK SIDE U.S. Health System

- Focus on Care for Older, Sicker Population
- Rising Costs + Budget Cuts
- Rationed Care for Most
- Many Medical Indigents
- Good Care for 30% Who "Buy Up"
- Fragmented Delivery System
- Lower Health Status

## THE DARK SIDE Military Health

- Modest Advances in Warzone Medicine
- Training Cutbacks Hurt Morale & Quality
- Emphasis on Using Fewer Resources Well
- Restricted HOOFTW
- Decline in MHSS Services
- Enlisted Remain in Direct Care System
- Officers Have Option for Outside Care

## GLOBAL MIND CHANGE Global Situation

- Catalytic Crises
- Electronic Forums & Local Innovations
- “Mind Change”-- *Creating A World That Works For Everyone For The Long Run*
- Threats of MRCS, Terrorism, Information Warfare Recede After 2010
- Success in Preventing & Limiting Violence
- Focus on Wellness, Prevention, Self-Care, & Healthy Communities
- Many Home Telehealth Services
- Fewer Health Professionals
- More Alternative Therapies
- Highly Integrated Delivery Systems
- High Health Status

## GLOBAL MIND CHANGE US. Health System

- Focus on Wellness, Prevention, Self-Care, & Healthy Communities
- Many Home Telehealth Services
- Fewer Health Professionals
- More Alternative Therapies
- Highly Integrated Delivery Systems
- High Health Status

GLOBAL MIND CHANGE

Military Health

- High Readiness, Geared to New Challenges
- High-Tech Warzone Medicine
- Home Biomonitor from DARPA Research
- HOOTW Elevated to a Central Mission
- International Rescue Missions
- Nation Building to "Design Out" Ill Health
- Privatized Universal Health Coverage

## THE TRANSFORMATION

## Global Situation

- World Leaders Traumatized by a Ruinous China-India War, Super-Terrorism, Chaos
- Momentous Technological Advances
- A Realization Spreads: *Human Society is Moving to a New Level of Capabilities*

## THE TRANSFORMATION

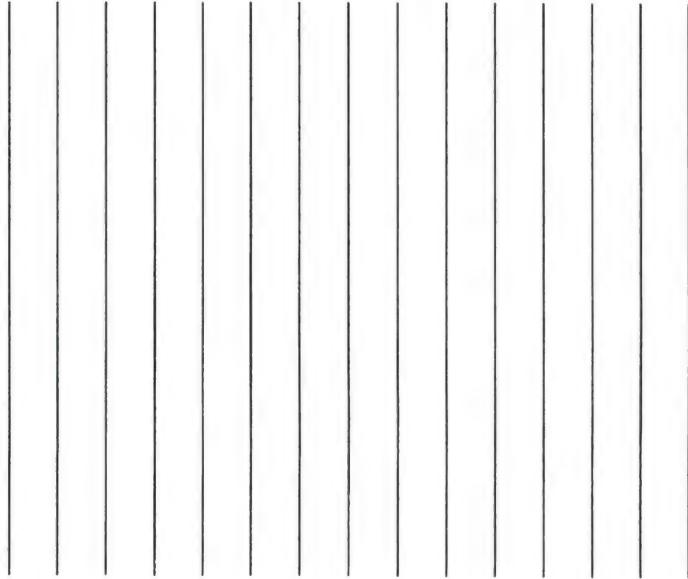
U.S. Health System

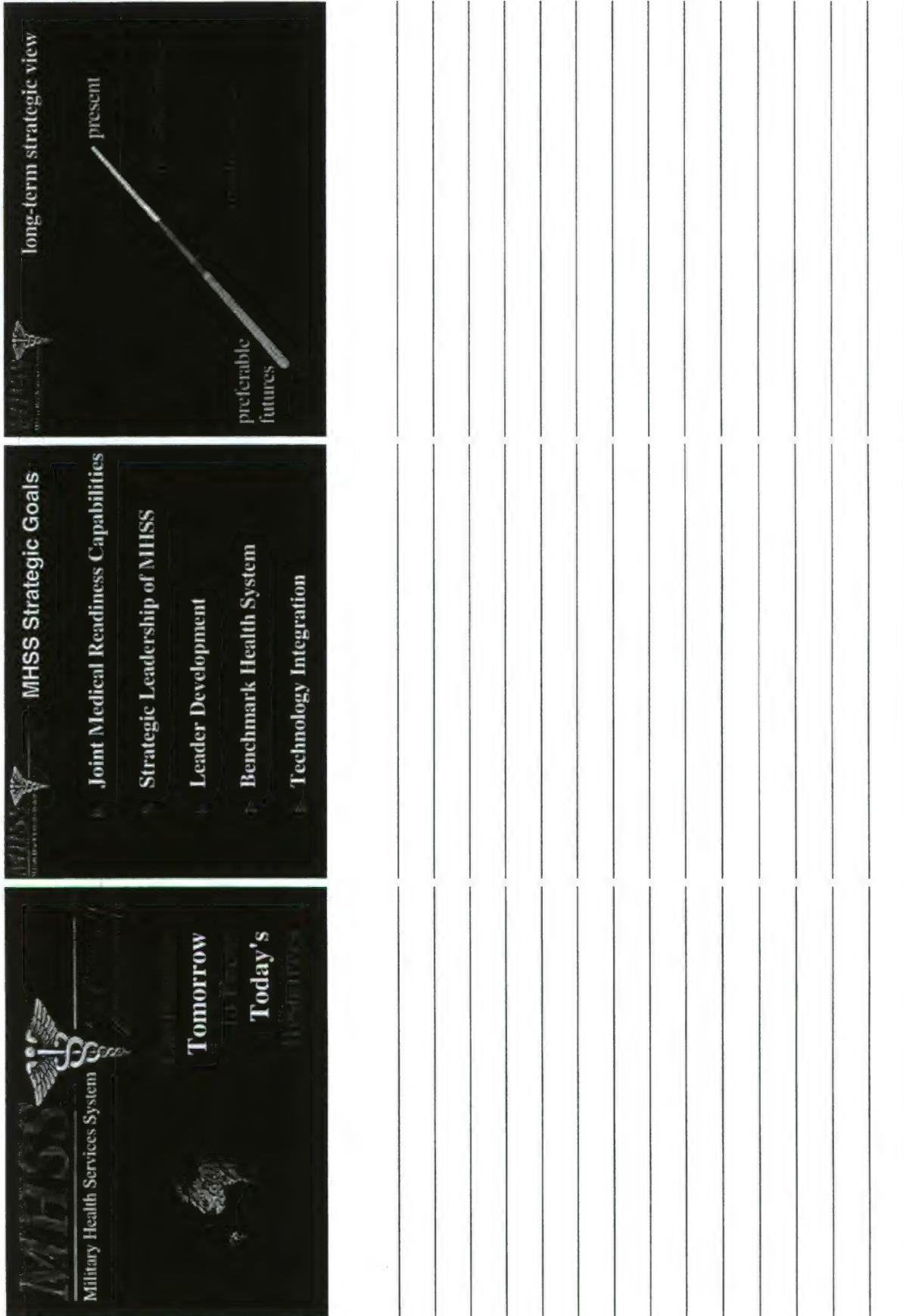
- Focus on Higher Functioning, Spiritual Growth, Highly Customized Care
- Healthy Lifestyles
- Nanomedicine & Genetic Breakthroughs
- AI for Advanced Home Telehealth
- Integrated, Community-Focused Delivery
- Life Extension

## THE TRANSFORMATION

### Military Health

- HOOTW is Main Focus
- Unparalleled Progress in Warzone Medicine, Even as Need for it Declines
- AI Hospital-on-the-Wrist, Auto-Transport
- Nanotechnology for Rapid Healing, Artificial Immune Systems
- High-Tech MHS is Provider of Choice





## GOAL STATEMENT



Our goal is to forecast changes in clinical and non-clinical technologies and methodologies in order to improve the focus for today's health system resourcing and support a seamless integration from fitness to combat.

## Sponsored Working Groups



**200** expert, sponsored members

**Practitioners, researchers and academics**

**Military, federal and private sector**

## Deliverables

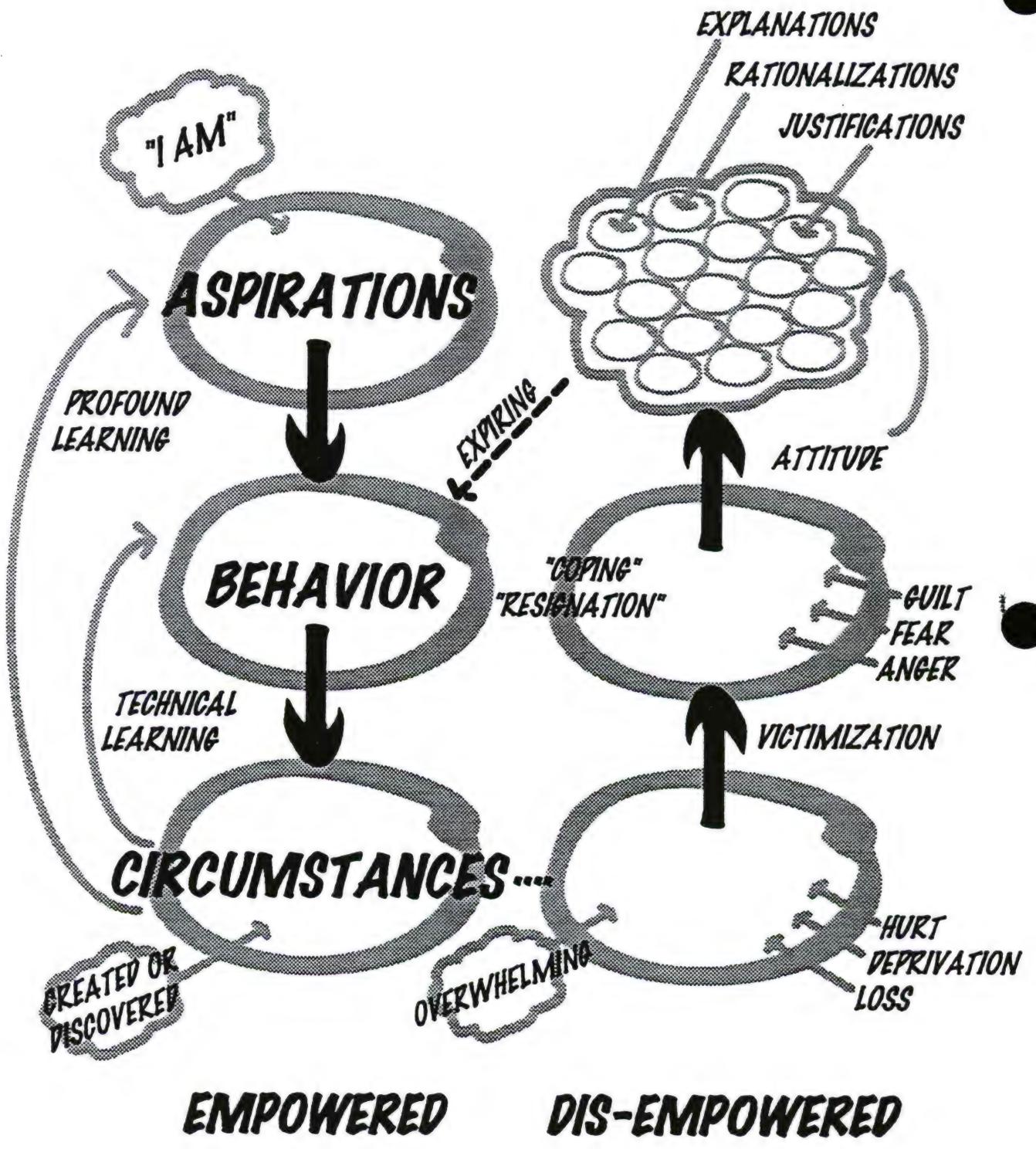


### The Book- Futures Scenarios/Trends

### FIRMS

### On-line health futures repository





**ASPIRATIONS MODEL™**

## GUIDELINES FOR COMPLETING THE PHYSICIAN EVALUATION TOOL

1. Each physician should complete an evaluation form. Please put your full name and address on the form. All evaluations will be summarized; names will be kept confidential and will not be used for any other purpose than to keep on file for CME purposes.
2. It is best to evaluate each presentation immediately after it concludes.
3. The only presentations being evaluated are those that are eligible for continuing medical education credit.
4. Circle the number in the "credits available" column next to each presentation you attend. When you have attended the last presentation that is eligible for credit, please count up the number of credits earned and bring the evaluation forms to the registration desk. A certificate of attendance will be issued at this time.

**DONT FORGET TO COMPLETE A SCANTRON PART A FORM ALSO**

---

## *CONTINUING EDUCATION*

### Continuing Medical Education

The Uniformed Services University of the Health Sciences (USUHS) is accredited by the Accreditation Council for Continuing Medical Education to sponsor continuing medical education for physicians.

USUHS designates this continuing medical education activity for 7 credit hours in Category 1 of the Physician's Recognition Award of the American Medical Association.

Partial credit will be awarded based on attendance

Name: \_\_\_\_\_

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PHYSICIAN EVALUATION TOOL  
**MHSS 2020**  
September 15-18, 1996

DATE	SESSION NUMBER, PRESENTATION TITLE, SPEAKERS, AND OBJECTIVES	CREDITS AVAILABLE
SESSIONS ELIGIBLE FOR CREDIT		
0900-0930 Monday, Sept. 16	Session 001: Highlights of the MHSS 2020 Scenarios <u>Speaker #1: RADM William R. Rowley, MC, USN</u>  Objective #1: discuss the futuring process Objective #2: describe the 10 scenarios as they relate to the four possible goal futures.	To what extent was each speaker knowledgeable, organized, and effective in presentation?  Marginal 1 2 3 4 Superior 5  To what extent have you achieved each objective of this session?  Marginal 1 2 3 4 Superior 5
	COMMENTS:	
1300-1500	Session 002: Vision and Military Medicine in the 21st Century  <u>Speaker #1: Roger Fritz</u> <u>Speaker #2: Clement Bezzold, Ph.D.</u>  Objective #1: explain how to align behaviors with vision statements to create organizational change and changes in individual behavior. Objective #2: test the effectiveness of actions aligned with vision in various scenarios using small group interactions to verify feasibility and desirability of strategies in contingent environments.	To what extent was each speaker knowledgeable, organized, and effective in presentation?  Marginal 1 2 3 4 Superior 5  To what extent have you achieved each objective of this session?  Marginal 1 2 3 4 Superior 5
	COMMENTS:	

SESSION NUMBER, PRESENTATION TITLE, SPEAKERS, AND OBJECTIVES		CREDITS AVAILABLE
0815-1000 and 1030-1100	Session 03: Discussion that Envisions the Best for Military Medicine in the 21st Century  <u>Speaker #1: Jonathan C. Peck</u>	To what extent was each speaker knowledgeable, organized, and effective in presentation?  Marginal 1 2 3 4 5 Superior 5 5
Tuesday, Sept. 17	Objective #1: recall statements that motivate behavior change in organizations.  <u>Speaker #1: Jonathan C. Peck</u>	To what extent have you achieved each objective of this session?  Marginal 1 2 3 4 5 Superior 5 5
COMMENTS:		
1300-1500	Session 04: Visions, Strategy, Implementation: Strategic Implications for Military Medicine  <u>Speaker #1: Roger Fritz</u> <u>Speaker #2: RADM William R. Rowley, MC, USN</u>	To what extent was each speaker knowledgeable, organized, and effective in presentation?  Marginal 1 2 3 4 5 Superior 5 5
	Objective #1: discuss the futuring process Objective #2: describe the 10 scenarios as they relate to the four possible goal futures.	To what extent have you achieved each objective of this session?  Marginal 1 2 3 4 5 Superior 5 5
COMMENTS:		
0815-0900  Wednesday, Sept. 18	Session 05: Strategy Review  <u>Speaker #1: RADM William R. Rowley, MC, USN</u>	To what extent was each speaker knowledgeable, organized, and effective in presentation?  Marginal 1 2 3 4 5 Superior 5 5
	Objective #1: discuss the futuring process Objective #2: describe the 10 scenarios as they relate to the four possible goal futures.	To what extent have you achieved each objective of this session?  Marginal 1 2 3 4 5 Superior 5 5
COMMENTS:		
MAXIMUM NUMBER OF CME CREDIT AVAILABLE IS 7 HOURS. PLEASE WRITE IN NUMBER OF CREDITS EARNED		

## **GUIDELINES FOR COMPLETING THE ACHE VERIFICATION OF ATTENDANCE FORM**

Each ACHE member or fellow must complete a verification of attendance form. When you have attended the last presentation that is eligible for credit, count up the number of credits earned, print your full name, sign the form, and bring it to the registration desk. A certificate of attendance will be issued at this time.

### **American College of Healthcare Executives**

USUHS is authorized to award 15 hours of pre-approved Category II (non-ACHE) continuing education credit for this program toward advancement, recertification, or reappointment in the American College of Healthcare Executives. Participants in this program wishing to have the continuing education hours applied toward Category II credit should list their attendance when making application to the American College of Healthcare Executives for advancement, recertification, or reappointment.

**DONT FORGET TO COMPLETE A SCANTRON PART A FORM ALSO**

**MHSS 2020 Futures Symposium**  
**Verification of Attendance for ACHE Members and Fellows**

Listed below are the presentations that have been awarded pre-approved Category II (non-ACHE) continuing education credit toward advancement, recertification, or reappointment in the American College of Healthcare Executives. In the column entitled "ACHE Credits Earned," write in the amount of credits available for each presentation you attend. When you have attended the last presentation for which you require ACHE credit, bring this form, along with your completed evaluation forms, to the registration desk. You will then receive a certificate of attendance issuing the appropriate amount of ACHE credit. Each ACHE member or fellow should claim only the number of hours of credit that he/she actually spent in the educational activity.

Date/ Time	Title of Presentation	ACHE Credits Available	ACHE Credits Earned
Monday September 16, 1996			
0900-1000 1030-1130	Highlights of the MHSS 2020 Scenarios Immersion in the World of 2020	2	
1300-1500 1530-1700	Vision and Military Medicine in the 21st Century Personal Vision Development	3.5	
Tuesday September 17, 1996			
0815-1000 1030-1130	Discussion that Envisions the Best for Military Medicine in the 21st Century	3	
1300-1500 1530-1700	Visions, Strategy, Implementation: Strategic Implications for Military Medicine	3.5	
Wednesday September 18, 1996			
0815-0900 0900-1000	Strategy Review Highest Priority Short-Term Steps (1988)	2	
1115-1200	Ensuring a Futures Focus for Military Medicine	1	
<b>TOTAL NUMBER OF ACHE CATEGORY II (NON-ACHE) CREDITS EARNED</b>			

I certify that I attended all presentations noted above and am returning all completed evaluation forms.

Printed Name

Signature

Date

## MHSS 2020 Futures Symposium

September 15 - 18, 1996

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**MHSS 2020 Futures Symposium**  
**September 15 - 18, 1996**

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## MHSS 2020 Futures Symposium

September 15 - 18, 1996

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